

Option	1
Option Description	Llanbedr Village: Safety Improvements

Impact Areas			Summary of Impacts	Assessment Score
WTS Ambitions	Good for people and communities	Equality	The proposals are not likely to have a significant positive impact on the protected characteristics overall. Due to the nature of the improvements, impacts are generally deemed as neutral with the impacts on disability, age, and pregnancy and maternity being slightly positive as the proposed changes will facilitate an environment whereby motorists will be required to be more aware of the potential conflicts within the carriageway (i.e. car doors opening, etc.). The proposals are not likely to have a significant negative impact on any of the protected characteristics.	0
		Health	This option has the potential to reduce some vehicle emissions and potentially improve air quality at the roadside as a result of speed management, however is unlikely to result in a material change in air quality in Llanbedr and as such, the impact will be negligible. The new proposed 20mph speed limit towards the village may have minor beneficial noise impacts, however overall impacts are anticipated to be neutral. This option is unlikely to impact on activity levels.	0
		Safety and Confidence	This option will contribute to safety and confidence by addressing personal safety on the roads for all road users.	+
	Good for the environment	Carbon Emissions	This option has a very low infrastructure carbon impact of ~140 tCO2e, relative to the other options. Implementation of these measures are likely to result in negligible - no change (< 1%) in user carbon emissions, during peak weekend hours.	0
		Biodiversity	Lower speed limits throughout the Site have the potential to reduce the number of wildlife-related road traffic collisions once in operation. Option 1 focuses on making roads safer through use of signage (slowing down speed limits) and road markings (i.e., yellow box markings, parking restrictions). There are no negative ecological impacts anticipated for Option 1. There are likely to be benefits to wildlife through reduced potential for wildlife-related road traffic collisions as a result of slower speed limits.	+
		Soils and Water	There are no deemed direct benefits nor disbenefits to soil, or contaminated land from the proposed traffic management interventions at this stage given the limited nature of the works. The interventions are predominantly surface-level and are not anticipated to result in any significant ground disturbance or alteration to existing land conditions.	0
		Waste	This option may generate small amounts of waste during construction in the form of redundant signage and other materials. Provided no waste is left on site, and waste is only transported by a registered waste carrier to a suitably licensed waste management facility, this option will likely result in negligible impacts. No impacts are anticipated in the operation phase. Overall, this option is anticipated to have a neutral impact on waste.	0
	Good for economy and places	Cohesive communities	This option helps to reduce traffic dominance along the A496 and through the village, by reducing speeds and implementing parking restrictions. It could therefore contribute to creating calmer, safer streets that enhance opportunities for connection and community cohesion. Car parking signage for Shell Island visitors also responds to the specific needs of the community.	+
		Innovation	These measures are not considered to provide a significant contribution to innovation.	0
		Distribution of goods	This option does not contribute to creating a more sustainable system of distributing goods in Wales.	0
		Affordability	This option does not contribute to making sustainable transport options more affordable.	0
	Good for culture and the Welsh language	Welsh language	This option is unlikely to have an impact on the Welsh Language.	0
		Arts, sports & culture	By improving safety, this option could enable more people to access arts, sports, natural and cultural heritage sites in the area using sustainable transport.	+
		Historic environment	The minor alterations to the alterations to the street furniture and road painting are not expected to have a physical or setting impact to any of the historic assets in the study area.	0
Study Objectives	Reduce the need to travel for key services and employment		This option will not impact on the need for people to travel.	0
	Improve safety for all transport modes		This option is not expected to provide a significant benefit to this study objective.	+
	Prioritise journeys on-foot and by cycle within Llanbedr village		Whilst these measures could ensure safety for pedestrians and cyclists throughout the village, they are not considered to contribute to prioritising journeys on-foot and by cycle. The walking and cycling routes within the village would remain as existing, which do not pass Active Travel Audits.	0
	Improve access by sustainable modes to and from Llanbedr and areas to the west of the village		These measures do not actively promote sustainable access, as there are no proposed improvements to walking, cycling or public transport.	0
	Enhance the local built environment to improve the sense of place and contribute to the vibrancy of the village		Whilst these measures could improve safety and make the village a more attractive space, this option is not considered to provide a significant contribution to this study objective.	0
	Reduce the impact of the visitor economy on the road network		If implemented, these measures could have a large adverse impact, resulting in more than a 30% increase in travel times along the A496 during peak times for the visitor economy, compared with a comparable out of season period.	-
	Improve the resilience of the transport network in and around Llanbedr		These measures - speed management, parking restrictions, traffic calming measures - could contribute to reducing the frequency of collisions and incidents along the A496. However, the overall impact is considered negligible.	0
	Reduce the impact of climate change on the local community		The option is not expected to have any significant impact on water environment or flood risk receptors. Implementation of this option is likely to result in negligible - no change (< 1%) in user carbon emissions, during peak weekend hours. Therefore, the overall impact of this option on this study objective, when considering both flood risk and user emissions, is considered to be neutral.	0

Option	2
Option Description	Llanbedr Village: Safety, Active Travel and Public Transport Improvements

Impact Areas			Summary of Impacts	Assessment Score
WTS Ambitions	Good for people and communities	Equality	The proposals are likely to have a positive impact on some of the protected characteristics, although the impacts are expected to be slight to moderate. The largest positive impact is likely to be on the age and pregnancy and maternity protected characteristics, largely driven by the proposed active travel infrastructure supporting journeys to Llanbedr Primary School and reducing safety concerns along the route. The proposals are not likely to have a significant negative impact on the protected characteristics overall.	++
		Health	This option has the potential to reduce some vehicle emissions and potentially improve air quality at the roadside as a result of speed management, however is unlikely to result in a material change in air quality in Llanbedr and as such, the impact will be negligible. The new proposed 20mph speed limit towards the village may have minor beneficial noise impacts, however overall impacts are anticipated to be neutral. This option could contribute to acitivity levels by making active travel more attractive and accessible within Llanbedr village.	+
		Safety and Confidence	This option will contribute to safety and confidence by addressing personal safety on roads and active travel routes for all users, and ensuring inclusive design of infrastructure.	+
	Good for the environment	Carbon Emissions	This option has a low infrastructure carbon impact of ~1,370 tCO2e, relative to the other options. Implementation of these measures are likely to result in negligible - no change (< 1%) in user carbon emissions, during peak weekend hours.	-
		Biodiversity	Option 2 includes road safety measures as per Option 1 but also includes proposals for active travel along the A496 and joining roads. In some cases, road widening and/or utilisation of road verges/field margins for active travel elements i.e. cycle path/pedestrian routes. In the short term, predicted loss of habitat to enable works will lead to a negative impact. However, habitat replacement has been built into the design. Ensuring that habitat is replaced at appropriate ratios and at a higher condition e.g., improved species-richness, will lead to long term beneficial impact.	+
		Soils and Water	There could potentially be some minor and localised impacts on soil, water and land quality resulting from the proposed improvements. These include the widening and upgrading of footways, provision of new pedestrian crossings, and enhancements to cycling infrastructure. While the level of excavation and soil turnover is expected to be limited, any such works have the potential to mobilise surface contaminants or increase the infiltration of water into subsurface soils. Where works involve widening existing footways or new surfacing, appropriate measures should be taken to ensure any materials used are chemically suitable for their end use, particularly in areas intended for pedestrian or community use. Surface water runoff during construction could also pose a minor pollution risk to local watercourses—especially if weather conditions are poor or drainage is inadequate. However, these risks can be mitigated through the adoption of best practice construction methods and consideration of SuDS (Sustainable Drainage Systems) where feasible. Overall, it is anticipated that potential environmental impacts associated with the proposed interventions could be adequately managed through appropriate construction practices and sensitive design at the detailed stage.	0
		Waste	This option may generate small amounts of waste during construction in the form of redundant signage and other materials. Provided no waste is left on site, and waste is only transported by a registered waste carrier to a suitably licensed waste management facility, this option will likely result in negligible impacts. No impacts are anticipated in the operation phase. Overall, this option is anticipated to have a neutral impact on waste.	0
	Good for economy and places	Cohesive communities	This option helps to reduce traffic dominance along the A496 and through the village, by reducing speeds and implementing parking restrictions. It could therefore contribute to creating calmer, safer streets that enhance opportunities for connection and community cohesion. Car parking signage for Shell Island visitors also responds to the specific needs of the community. Welcome signage, delivery lockers, cycle parking and public realm improvements all contribute to improving community cohesion. Through providing improved pedestrian and cyclist infrastructure - such as safe, accessible pavements and crossings - the active travel improvements contribute to the creation of walkable environments which encourage interaction and supports mobility for all users.	+
		Innovation	Whilst public transport services departure boards are included within this option, this is not considered to provide a significant contribution to innovation.	0
		Distribution of goods	By improving active travel infrastructure which could be utilised for deliveries within Llanbedr village, this option could contribute to creating a more sustainable system of distributing goods in Wales. Delivery lockers could also support this.	+
		Affordability	This option may contribute to affordability as improving active travel infrastructure could allow people to use low-cost travel modes such as walking and cycling, making affordable sustainable travel more viable.	+
	Good for culture and the Welsh language	Welsh language	This option could support the Welsh-speaking population in Llanbedr and surrounding areas by enhancing access to local jobs, services, and tourism . Of particular note, one of the measures included in this option package supports access to a Welsh language primary school.	++
		Arts, sports & culture	By improving safety and active travel provision, this option could enable more people to access arts, sports, natural and cultural heritage sites in the area using sustainable transport.	++
		Historic environment	There is potential for direct impacts to historic assets, including a Roman road (PRN 17825), Llanbedr Historic Landscape and non-designated asset Road, Y Sarn Hir (PRN 25045). There is also likely to be setting impacts to the scheduled Pont Llanbedr (SM026) and to the Llanbedr War Memorial (PRN 71426). Any works which come with the boundary of the scheduled monument will require Scheduled Monument Consent. Given the potential for direct impacts, Option 2 is anticipated to have a slight adverse impact on heritage.	-
Study Objectives	Reduce the need to travel for key services and employment		The proposal to introduce delivery lockers could reduce the need to travel to nearby locations to collect parcels and deliveries.	+
	Improve safety for all transport modes		This option is expected to provide a slight contribution to this study objective.	+
	Prioritise journeys on-foot and by cycle within Llanbedr village		Active travel audits conducted on the proposed walking routes that form part of this option indicate that all four routes would pass, with three achieving a 'desirable score'. Audits conducted on the proposed cycling routes that form part of this option indicate that three of the four routes would pass, with two achieving a 'desirable score'. However, the cycling route along the A496 is expected to fail, as some shared use sections of the route are proposed to be below the 2.5m desirable minimum. These measures could therefore have a slight beneficial impact, as some routes pass and some routes fail, with some departures from Active Travel Act Guidance standards required.	+
	Improve access by sustainable modes to and from Llanbedr and areas to the west of the village		The active travel route proposed along the A496 as part of this option extends to the existing shared use path in Pensarn to the north, and therefore contributes to improving access by sustainable modes to and from Llanbedr.	+
	Enhance the local built environment to improve the sense of place and contribute to the vibrancy of the village		The measures support vibrancy through activel travel improvements and community infrastructure like bus stops and lockers, and public realm upgrades that invite more engagement with the village centre.	+
	Reduce the impact of the visitor economy on the road network		If implemented, these measures could have a large adverse impact, resulting in more than a 30% increase in travel times along the A496 during peak times for the visitor economy, compared with a comparable out of season period.	-
	Improve the resilience of the transport network in and around Llanbedr		The safety improvements - speed management, parking restrictions, traffic calming measures - could contribute to reducing the frequency of collisions and incidents along the A496. The active travel improvements could contribute to reducing the frequency of collisions and incidents along the A496 by reducing conflict between modes. However, cyclists would be required to interact with motor traffic over the Afon Artro Bridge.	+
	Reduce the impact of climate change on the local community		The proposed active travel routes are located within fluvial and tidal Flood Zones 2 and 3. New and widened paths could reduce floodplain storage although the impacts are likely to be negligible. It is currently unknown if the new footpath proposed adjacent to the Afon Artro will be flush with existing ground level or raised above existing ground level. A raised structure would result in loss of floodplain storage and potentially increase flood risk elsewhere. This option may therefore have a slight adverse impact on flood risk receptors. Implementation of these measures are likely to lead to negligible - no change (< 1%) in user carbon emissions, during peak weekend hours. Therefore, the overall impact of this option on this study objective, when considering both flood risk and user emissions, is considered to be slight adverse.	-



Option	3
Option Description	Llanbedr Village: Safety, Active Travel, Public Transport Improvements & Traffic Signals

Impact Areas			Summary of Impacts	Assessment Score
WTS Ambitions	Good for people and communities	Equality	The proposals are likely to have a positive impact on some of the protected characteristics, although the impacts are expected to be slight to moderate. The largest positive impact is likely to be on the age and pregnancy and maternity protected characteristics, largely driven by the proposed active travel infrastructure supporting journeys to Llanbedr Primary School and reducing safety concerns along the route. The proposals are not likely to have a significant negative impact on the protected characteristics overall.	++
		Health	This option has the potential to reduce some vehicle emissions and potentially improve air quality at the roadside as a result of speed management, however is unlikely to result in a material change in air quality in Llanbedr and as such, the impact will be negligible. The new proposed 20mph speed limit towards the village may have minor beneficial noise impacts, however overall impacts are anticipated to be neutral. This option could contribute to acitivity levels by making active travel more attractive and accessible within Llanbedr village.	+
		Safety and Confidence	This option will contribute to safety and confidence by addressing personal safety on roads and active travel routes for all users, and ensuring inclusive design of infrastructure.	+
	Good for the environment	Carbon Emissions	This option has a low infrastructure carbon impact of ~1,400 tCO2e, relative to the other options. These measures could lead to a minor avoidance (<2%) in user carbon emissions, during peak weekend hours.	+
		Biodiversity	Option 3 is very similar to Option 2, with the addition of a traffic signal system surrounding the A496 Afon Artro Bridge. This addition has no predicted adverse implications for ecology based on current design information.	+
		Soils and Water	There could potentially be some minor impacts on the soils, water environment and land quality. Particularly where proposed interventions involve ground disturbance or reconfiguration of existing infrastructure. These include the provision of new pedestrian crossings, the widening and surfacing of footways, installation of new bus stops and shelters, cycle shelters, secure delivery lockers, and the construction of a new footpath link as part of Footpath 41. There is potential for minor disturbance to existing soils during excavation or path widening works, which may give rise to risks associated with direct contact exposure, particularly in landscaped areas. The chemical suitability of fill materials used in soft landscaping should be assessed during the detailed design stage to minimise any risks to human health or water receptors. Overall, with the incorporation of best practice construction measures and careful material selection, it is anticipated that any environmental impacts could be effectively mitigated as part of the detailed design phase.	0
		Waste	This option may generate small amounts of waste during construction in the form of redundant signage and other materials. Provided no waste is left on site, and waste is only transported by a registered waste carrier to a suitably licensed waste management facility, this option will likely result in negligible impacts. No impacts are anticipated in the operation phase. Overall, this option is anticipated to have a neutral impact on waste.	0
	Good for economy and places	Cohesive communities	This option helps to reduce traffic dominance along the A496 and through the village by reducing speeds and implementing parking restrictions. It could therefore contribute to creating calmer, safer streets that enhance opportunities for connection and community cohesion. Car parking signage for Shell Island visitors also responds to the specific needs of the community. Welcome signage, delivery lockers, cycle parking and public realm improvements all contribute to improving community cohesion. Through providing improved pedestrian and cyclist infrastructure - such as safe, accessible pavements and crossings - the active travel improvements contribute to the creation of walkable environments which encourage interaction and supports mobility for all users.	+
		Innovation	Whilst public transport services departure boards are included within this option, this is not considered to provide a significant contribution to innovation.	0
		Distribution of goods	By improving active travel infrastructure which could be utilised for deliveries within Llanbedr village, this option could contribute to creating a more sustainable system of distributing goods in Wales. Delivery lockers could also support this.	+
		Affordability	This option may contribute to affordability as improving active travel infrastructure could allow people to use low-cost travel modes such as walking and cycling, making affordable sustainable travel more viable.	+
	Good for culture and the Welsh language	Welsh language	This option could support the Welsh-speaking population in Llanbedr and surrounding areas by enhancing access to local jobs, services, and tourism. Of particular note, one of the measures included in this option package supports access to a Welsh language primary school.	++
		Arts, sports & culture	By improving safety and active travel provision, this option could enable more people to access arts, sports, natural and cultural heritage sites in the area using sustainable transport.	++
		Historic environment	There is potential for direct impacts to historic assets, including a Roman road (PRN 17825), Llanbedr Historic Landscape, a Grade II listed milestone (82006) and the non-designated asset Road, Y Sarn Hir (PRN 25045). There is also likely to setting impacts to the scheduled Pont Llanbedr (SM026), the Grade II listed Moriah Calvanist Chapel (18963), the Llanbedr War Memorial (PRN 71426) and the non-designated Chapel House and Vestry (PRN 103682). Any works which come with the boundary of a scheduled monument will require Scheduled Monument Consent and works impacting a listed building will need Listed Building Consent. Given the potential for direct impacts, Option 3 is anticipated to have a slight adverse impact on heritage.	-
Study Objectives	Reduce the need to travel for key services and employment		The proposal to introduce delivery lockers could reduce the need to travel to nearby locations to collect parcels and deliveries.	+
	Improve safety for all transport modes		This option is expected to provide a slight contribution to this study objective.	+
	Prioritise journeys on-foot and by cycle within Llanbedr village		Active travel audits conducted on the proposed walking routes that form part of this option indicate that all four routes would pass, with three achieving a 'desirable score'. Audits conducted on the proposed cycling routes that form part of this option indicate that three of the four routes would pass, with two achieving a 'desirable score'. However, the route along the A496 is expected to fail, as some shared use sections of the route are proposed to be below the 2.5m desirable minimum. These measures could therefore have a slight beneficial impact, as some routes pass and some routes fail, with some departures from Active Travel Act Guidance standards required.	+
	Improve access by sustainable modes to and from Llanbedr and areas to the west of the village		The active travel route proposed along the A496 as part of this option extends to the existing shared use path in Pensarn to the north, and therefore contributes to improving access by sustainable modes to and from Llanbedr. Whilst traffic signals do not directly contribute to improving access by sustainable modes, they could contribute a very slight contribution by improving journey time reliability for public transport modes.	+
	Enhance the local built environment to improve the sense of place and contribute to the vibrancy of the village		The measures support vibrancy through activel travel improvements and community infrastructure like bus stops and lockers, and public realm upgrades that invite more engagement with the village centre. The addition of traffic signals offer better safety.	+
	Reduce the impact of the visitor economy on the road network		If implemented, these measures could have a large adverse impact, resulting in more than a 30% increase in travel times along the A496 during peak times for the visitor economy, compared with a comparable out of season period.	-
	Improve the resilience of the transport network in and around Llanbedr		The safety improvements - speed management, parking restrictions, yellow box - could contribute to reducing the frequency of collisions and incidents along the A496. These active travel improvements could contribute to reducing the frequency of collisions and incidents along the A496 by reducing conflict between modes. However, cyclists would be required to interact with motor traffic over the Afon Artro Bridge and for a short section to the south of the Bridge also. The traffic signals could also contribute to reducing the frequency of collisions and incidents along the A496, and given that this controls the flow of traffic over the Afon Artro Bridge in particular, the potential for failure of infrastructure in the future is minimised.	++
	Reduce the impact of climate change on the local community		The proposed active travel routes are located within fluvial and tidal Flood Zones 2 and 3. New and widened paths could reduce floodplain storage although the impacts are likely to be negligible. Impact to flood storage and conveyance are considered insignificant. It is currently unknown if the new footpath proposed adjacent to the Afon Artrowill be flush with existing ground level or raised above existing ground level. A raised structure would result in loss of floodplain storage and potentially increase flood risk elsewhere. This option may therefore have a slight adverse impact on flood risk receptors. Implementation of these measures could lead to a minor decrease (< 2%) in user carbon emissions, during peak weekend hours. Therefore, the overall impact of this option on this study objective, when considering both flood risk and user emissions, is considered to be slight adverse.	-

Option	4
Option Description	Llanbedr Village: Safety, Active Travel, Public Transport Improvements & Traffic flow improvements ( off-street car park )

Impact Areas			Summary of Impacts	Assessment Score
WRS Ambitions	Good for people and communities	Equality	The proposals are likely to have a positive impact on some of the protected characteristics, although the impacts are expected to be slight to moderate. The largest positive impact is likely to be on the age and pregnancy and maternity protected characteristics, largely driven by the proposed active travel infrastructure supporting journeys to Llanbedr Primary School and reducing safety concerns along the route. The proposals are not likely to have a significant negative impact on the protected characteristics overall.	++
		Health	This option has the potential to reduce some vehicle emissions and potentially improve air quality at the roadside as a result of speed management. Additionally, off-street parking could reduce on-road congestion and potentially lead to a minor reduction in vehicle emissions. Therefore this option may lead to minor improvements in air quality. The new proposed 20mph speed limit towards the village may have minor beneficial noise impacts, however overall impacts are anticipated to be neutral. This option could contribute to acitivity levels by making active travel more attractive and accessible within Llanbedr village.	+
		Safety and Confidence	This option will contribute to safety and confidence by addressing personal safety on roads and active travel routes for all users, and ensuring inclusive design of infrastructure.	+
	Good for the environment	Carbon Emissions	This option has a low infrastructure carbon impact of ~1,460 tCO2e, relative to the other options. Over 600 tCO2e of this impact is due to the active travel improvements alongside the A496. These measures could lead to a minor avoidance (<2%) in user carbon emissions, during peak weekend hours.	+
		Biodiversity	Option 4 is very similar to Option 2 and Option 3, with the addition of allocated parking areas. The design incorporates existing parking areas in 3 of the 4 proposed parking areas. The new parking area will involve removal of improved/poor-semi-improved grassland to create a road leading to the car park and a car park area. The car park area will utilise grasscrete material to support natural water drainage and greenery. In the short term, loss of habitats to enable the works is predicted to lead to a negative impact. However, habitat replacement has been built into the design. Ensuring that habitat is replaced at appropriate ratios and at a higher condition e.g., improved species-richness, will lead to long term beneficial impact. If these ratios are not met, the assessment would be re-evaluated and may result in a negative (-) long-term impact.	+
		Soils and Water	There could potentially be some minor impacts on the water environment and land quality associated with this package of interventions, particularly where proposals involve excavation, resurfacing, and the reconfiguration of existing infrastructure. These include the introduction of off-road residential parking surfaced with grasscrete paving, which—while designed to promote natural infiltration—may involve limited vegetation clearance and soil disturbance during construction. Construction activities, particularly those involving land take or modification of existing boundaries may give rise to a temporary increase in sediment-laden runoff or accidental spillages. This risk can be effectively minimised through adherence to best practice construction and pollution prevention measures. Where soft landscaping is proposed, such as tree and hedgerow planting behind reinstated boundary walls, it will be important to ensure that fill or topsoil materials used are chemically suitable for their intended use, to avoid risks to human health or groundwater receptors via direct contact or infiltration pathways. Additional features such as cycle shelters, delivery lockers, real-time information displays, and public realm enhancements are unlikely to pose significant environmental risk. Overall, it is considered that with appropriate mitigation the potential impacts on the water environment and land quality could be effectively managed and may in fact result in long-term benefits through improved drainage, sustainable transport infrastructure, and enhanced public realm.	0
		Waste	This option may generate small amounts of waste during construction in the form of redundant signage and other materials. Provided no waste is left on site, and waste is only transported by a registered waste carrier to a suitably licensed waste management facility, this option will likely result in negligible impacts. No impacts are anticipated in the operation phase. Overall, this option is anticipated to have a neutral impact on waste.	0
	Good for economy and places	Cohesive communities	This option helps to reduce traffic dominance along the A496 and through the village, by reducing speeds and implementing parking restrictions. It could therefore contribute to creating calmer, safer streets that enhance opportunities for connection and community cohesion. Car parking signage for Shell Island visitors also responds to the specific needs of the community. Welcome signage, delivery lockers, cycle parking and public realm improvements all contribute to improving community cohesion. Through providing improved pedestrian and cyclist infrastructure - such as safe, accessible pavements and crossings - the active travel improvements contribute to the creation of walkable environments which encourage interaction and supports mobility for all users. The provision of off-street car parking could remove parked, or parking, vehicles along the A496 and through the village, therefore contributing to creating calmer, safer streets that enhance opportunities for connection and community cohesion.	+
		Innovation	Whilst public transport services departure boards are included within this option, this is not considered to provide a significant contribution to innovation.	0
		Distribution of goods	By improving active travel infrastructure which could be utilised for deliveries within Llanbedr village, this option could contribute to creating a more sustainable system of distributing goods in Wales. Delivery lockers could also support this.	+
		Affordability	This option may contribute to affordability as improving active travel infrastructure could allow people to use low-cost travel modes such as walking and cycling, making affordable sustainable travel more viable.	+
	Good for culture and the Welsh language	Welsh language	This option could support the Welsh-speaking population in Llanbedr and surrounding areas by enhancing access to local jobs, services, and tourism. Of particular note, one of the measures included in this option package supports access to a Welsh language primary school.	++
		Arts, sports & culture	By improving safety and active travel provision, this option could enable more people to access arts, sports, natural and cultural heritage sites in the area using sustainable transport.	++
		Historic environment	There is potential for direct impacts to historic assets, including a Roman road (PRN 17825), Llanbedr Historic Landscape and the non-designated asset Road, Y Sarn Hir (PRN 25045) There is also likely to setting impacts to the scheduled Pont Llanbedr (SM026), the Grade II listed Moriah Calvinist Chapel (18963), the Grade II Wenallt Stores (82016) and the Llanbedr War Memorial (PRN 71426). Any works which come with the boundary of a scheduled monument will require Scheduled Monument Consent, and works impacting a listed building will need Listed Building Consent. Given the potential for direct impacts, Option 4 is anticipated to have a slight adverse impacts on heritage.	-
Study Objectives	Reduce the need to travel for key services and employment		The proposal to introduce delivery lockers could reduce the need to travel to nearby locations to collect parcels and deliveries.	+
	Improve safety for all transport modes		This option is expected to provide a slight contribution to this study objective.	+
	Prioritise journeys on-foot and by cycle within Llanbedr village		Active travel audits conducted on the proposed walking routes that form part of this option indicate that all four routes would pass, with three achieving a 'desirable score'. Active travel audits conducted on the proposed cycling routes that form part of this option indicate that three of the four routes would pass, with two achieving a 'desirable score'. However, the route along the A496 is expected to fail. Some shared use sections of the route are proposed to be below the 2.5m desirable minimum. These measures could therefore have a slight beneficial impact, as some routes pass and some routes fail, with some departures from Active Travel Act Guidance standards required.	+
	Improve access by sustainable modes to and from Llanbedr and areas to the west of the village		The active travel route proposed along the A496 as part of this option extends to the existing shared use path in Pensarn to the north, and therefore contributes to improving access by sustainable modes to and from Llanbedr. Whilst the off-street parking may have a slight positive impact on journey time reliability of public transport modes as it removes parked cars from along the A496 which could improve congestion, it does not actively promote sustainable access.	+
	Enhance the local built environment to improve the sense of place and contribute to the vibrancy of the village		The measures support vibrancy through activel travel improvements and community infrastructure like bus stops and lockers, and public realm upgrades that invite more engagement with the village centre. The addition of off-street parking could enhance streetscape appeal and usability.	+
	Reduce the impact of the visitor economy on the road network		If implemented, these measures could have a large adverse impact, resulting in more than a 30% increase in travel times along the A496 during peak times for the visitor economy, compared with a comparable out of season period.	-
	Improve the resilience of the transport network in and around Llanbedr		The safety improvements - speed management, parking restrictions, yellow box - could contribute to reducing the frequency of collisions and incidents along the A496. The active travel improvements could contribute to reducing the frequency of collisions and incidents along the A496 by reducing conflict between modes. However, cyclists would be required to interact with motor traffic over the Afon Artro Bridge. The off-street parking could also contribute to reducing the frequency of collisions and incidents along the A496, by removing parked cars from the main road.	+
	Reduce the impact of climate change on the local community		The proposed active travel routes are located within fluvial and tidal Flood Zones 2 and 3. It is assumed that the infrastructure would be raised above existing ground level although some flooding would be permissible. This could result in loss of floodplain storage and potentially increase flood risk elsewhere. It is currently unknown if the new footpath proposed adjacent to the Afon Artro will be flush with existing ground level or raised above existing ground level. A raised structure would result in loss of floodplain storage and potentially increase flood risk elsewhere. This option may therefore have a slight adverse impact on flood risk receptors. Implementation of these measures could lead to a minor decrease (< 2%) in user carbon emissions, during peak weekend hours. Therefore, the overall impact of this option on this study objective, when considering both flood risk and user emissions, is considered to be slight adverse.	-



Option	5
Option Description	Llanbedr Village: Safety Improvements & Low-Speed Relief Road

Impact Areas			Summary of Impacts	Assessment Score
WTS Ambitions	Good for people and communities	Equality	The proposals are likely to have a positive impact on some of the protected characteristics, although the impacts are expected to be slight. The largest positive impacts are likely to be on the disability and pregnancy and maternity protected characteristics, largely driven by the formalisation of parking and the reduction in traffic volume. The proposals are not likely to have a significant negative impact on the protected characteristics overall.	+
		Health	The low-speed relief road has the potential to reduce congestion on roads and may improve air quality. Additionally, restricted HGV movements and speed management could lead to a reduction in vehicle emissions and potentially improve air quality. This option therefore could lead to substantial benefits. Due to the expected reduction in traffic flow along the A496 with a road in place, the anticipated noise impact during operation is considered beneficial within the village area. Predicted noise levels on the existing A496 road show an approximate reduction of 10 dB compared to the current levels on the existing A496 road. The restriction of HGV movements from the A496 is also anticipated to have beneficial noise impacts. This option could reduce traffic demand along the existing A496 through Llanbedr by re-routing most traffic along the new low-speed relief road, therefore enabling active travel journeys to be undertaken more safely and effectively within the village, supporting an increase in activity levels.	++
		Safety and Confidence	This option will contribute to safety and confidence by addressing personal safety on the roads for all road users. This positive impact will be emphasised with a low-speed relief road in place as most of the motor traffic would be removed from Llanbedr Village, including HGVs, resulting in a safer environment. COBALT analysis has demonstrated a saving of 6 KSI collisions.	++
	Good for the environment	Carbon Emissions	This option has a very high infrastructure carbon impact of ~12,540 tCO2e, relative to the other options. Over 12,000 tCO2e of this impact is due to the 40-mph Low speed relief road. However, implementation of these measures could achieve a moderate avoidance (~ 20%) of user carbon emissions, during peak weekend hours.	--
		Biodiversity	Option 5 focuses on making road safer through use of signage (slowing down speed limits), road markings (i.e., yellow box markings, parking restrictions) and restriction of HGV movement through Llandbedr village. The relief road is designed to reduce traffic through Llandbedr village and limit access to HGVs. The construction of the relief road itself is currently designed so that it will impact Priority Habitats including lowland meadow, purple moor-grass and rush pastures and coastal saltmarsh. It will also lead to loss of semi-improved grassland of moderate species richness. The proposals also have potential to impact International Sites including Pen Llyn a'r Sarnau/Lleyn Peninsula and the Sarnau SAC, Northern Cardigan Bay/Gogledd Bae Ceredigion SPA, Meirion/Meirionnydd Oakwoods and Bat Sites SAC and Morfa Dyffryn SSSI. Recommended further measures are outlined above. Overall, this Option is predicted to have a slight adverse effect on biodiversity based on the assumption that the mitigation, comepsnation and enhancement measures in the 2019 ES will be implemented for this scheme.	-
		Soils and Water	There could potentially be some impact on the water environment associated with the proposed 40mph relief road from the south to the north of Llanbedr, particularly where it crosses the River Artro and traverses areas near existing watercourses. Crossing the River Artro introduces a risk of pollution from construction runoff, though this can be effectively mitigated through standard best practice measures and construction phase environmental management plans. Ground investigation will be required to fully understand ground conditions and suitability of material for reuse from cuttings into embankment fill to ensure the project is sustainable. The proximity to Llanbedr Railway Station and associated ground disturbance for re-aligning access routes and embankments may trigger the need for ground investigations to assess the potential presence of contamination. If soft landscaping is introduced, it could create direct contact pathways, increasing potential risks to human health and groundwater receptors. It is anticipated that, with careful planning and mitigation measures, any risks or impacts can be effectively managed as part of the development process.	0
		Waste	This option would generate large quantities of waste during construction in the form of redundant materials and a significant amount vegetation as a result of clearance from site. Provided construction methods are employed in order to achieve the reuse/recycling targets for construction and demolition waste, no waste is left on site, and waste is only transported by a registered waste carrier to a suitably licensed waste management facility, potential impacts would be minimised. As part of the 2019 ES, with mitigations in place including the implementation of a Site Waste Management Plan (SWMP) re-use of material on site, identification of local suppliers and implementation of best practice site methods for storage/processing of materials as stipulated in a Construction Environmental Management Plan (CEMP), impacts were assessed	-
	Good for economy and places	Cohesive communities	This option helps to reduce traffic dominance along the A496 and through the village by implementing speed reductions and parking restrictions. These changes would help create calmer, safer streets that promote community cohesion and connection. A low-speed relief road could provide the most significant contribution toward achieving this.	++
		Innovation	These measures are not considered to provide a significant contribution to innovation.	0
		Distribution of goods	A low-speed relief road could enable HGVs to be restricted from passing through the village, with freight traffic instead diverted onto the new route. This diversion would improve delivery efficiency by reducing delays and allowing for more fuel-efficient and reliable journeys.	+
		Affordability	By diverting traffic away from Llanbedr village and creating a safer, more pleasant environment for pedestrians and cyclists, a low-speed relief road could encourage greater uptake of low-cost travel options such as walking and cycling. However, without being paired with active travel infrastructure improvements in the village, its contribution to affordability is more limited.	+
	Good for culture and the Welsh language	Welsh language	This option could support the Welsh-speaking population in Llanbedr and surrounding areas by enhancing economic opportunities, improving access to jobs, services, and tourism.	+
		Arts, sports & culture	By improving safety, this option could enable more people to access arts, sports, natural and cultural heritage sites in the area using sustainable transport. A low-speed relief road could further support this by removing traffic from Llanbedr village, contributing to a safer environment that could encourage the uptake of sustainable modes.	++
		Historic environment	The construction of a new relief road has the potential to physically impact 32 non-designated historic assets, the majority of which date to the post-medieval and modern periods. There will also be an impact on the Arduwy Historic Landscape. As part of the 2019 ES, an Assessment of the Significance of the Impact of Development on Historic Landscape Areas on the Register of Landscapes of Historic Interest in Wales	--
Study Objectives	Reduce the need to travel for key services and		This option will not impact on the need for people to travel.	0
	Improve safety for all transport modes		This option is expected to provide a moderate contribution to this study objective, with an accident volume benefit of 5.7 personal injury accidents avoided over 60 years.	+++
	Prioritise journeys on-foot and by cycle within Llanbedr village		Whilst routing traffic to the west of the village could reduce demand along the A496, and allow for road space in the village to be redesigned to better accommodate, and prioritise, active travel, this option is not paired with active travel improvements and therefore the walking and cycling provision within the village would remain as existing, which does not pass Active Travel Audits. Furthermore, whilst the 'safety and other improvements' could ensure safety for pedestrians and cyclists throughout the village, they are not considered to contribute to prioritising journeys on-foot and by cycle.	0
	Improve access by sustainable modes to and from Llanbedr and areas to the west of the village		The proposed new road contributes to the objective by reducing through-traffic within Llanbedr, thereby improving traffic conditions and creating opportunities for reallocating road space. For this reason, it could provide a benefit to bus services that route along the existing A496 through ensuring they are not adversely impacted by journey time delay and inconsistency within the village. However, paired with safety enhancements in the village only, this option does not directly improve sustainable access, unless paired with supporting active travel measures. Its contribution is therefore limited in terms of meeting this study objective.	+
	Enhance the local built environment to improve the sense of place and contribute to the vibrancy of the village		By removing traffic from the village centre, the proposed low-speed relief road could help to create a more pleasant, walkable and community-orientated village centre, especially given the removal of HGVs from this area. However, without accompanying improvements to active travel routes, placemaking or the public realm, its impact on vibrancy and sense of place remains somewhat more limited.	++
	Reduce the impact of the visitor economy on the road network		If implemented, these measures could have a large beneficial impact, resulting in less than 5% increase in travel times along the A496 during peak times for the visitor economy, compared with a comparable out of season period. As the visitor economy significantly increases traffic demand along the A496, the removal of the vast majority of trips from the centre of Llanbedr village could significantly reduce the impact of the visitor economy locally. Of particular note, Shell Island is a significant generator of visitor trips in the local area, which contributes to issues at the A496 Afon Artro bridge and A496/Mochras Road junction. On this basis, removing the need for visitors to travel through Llanbedr to access Shell Island will significantly reduce the impact of the visitor economy on the local road network.	++
	Improve the resilience of the transport network in and around Llanbedr		The safety improvements - speed management, parking restrictions, restrict HGV movements - could contribute to reducing the frequency of collisions and incidents along the A496. A low-speed relief road could improve the resilience of Llanbedr's road network by reducing the flow of traffic that is required to route via the Afon Artro Bridge, therefore reducing the potential infrastructure failure risks. It provides an alternative route in the event of a disruption on the A496, and can ensure safety in design. Restricting motor vehicle access across the bridge while maintaining it for public transport enhances the reliability of public transport services.	+++
	Reduce the impact of climate change on the local community		Review of NRW flood maps identifies that the Low-Speed Relief Road (LSRR) passes through both fluvial and tidal Flood Zone 2 and 3, as well as crossing earth flood defence embankments adjacent to the Afon Artro and its tributary to the north. The alignment of the flood defence embankments will be maintained. However consultation has not yet been undertaken with NRW to seek agreement of the proposals or understand any future improvements/works that may be required for maintenance or to manage the potential effects of climate change. It is however considered likely that the LSRR can accommodate specified requirements as the design of the option progresses. Any loss of fluvial floodplain (and potentially tidal floodplain) will require compensation and any increase in flood risk to third parties will require mitigation. It is not yet clear where compensation will be provided nor the nature of other mitigation that may be required. However, implementation of these measures could achieve a moderate avoidance (~ 20%) of user carbon emissions, during peak weekend hours. The overall impact of this option on this study objective is therefore considered to be neutral given the competing impacts on flood risk and user emissions. It is however acknowledged that mitigation is required to address impacts on the environment.	0



Option	6
Option Description	Llanbedr Village: Safety, Active travel, Public Transport Improvements & Low-Speed Relief Road

Impact Areas			Summary of Impacts	Assessment Score
WTS Ambitions	Good for people and communities	Equality	The proposals are likely to have a positive impact on some of the protected characteristics, although the impacts are expected to be slight to moderate. The largest positive impact is likely to be on the age and pregnancy and maternity protected characteristics, largely driven by the proposed active travel infrastructure supporting journeys to Llanbedr Primary School and reducing safety concerns along the route. The proposals are not likely to have a significant negative impact on the protected characteristics overall.	++
		Health	The low-speed relief road has the potential to reduce congestion on roads and may improve air quality. Additionally, restricted HGV movements and speed management could lead to a reduction in vehicle emissions and potentially improve air quality. This option therefore could lead to substantial benefits. Due to the expected reduction in traffic flow along the A496 with a road in place, the anticipated noise impact during operation is considered beneficial within the village area. Predicted noise levels on the existing A496 road show an approximate reduction of 10 dB compared to the current levels on the existing A496 road. The restriction of HGV movements from the A496 is also anticipated to have beneficial noise impacts. This option could contribute to activity levels by making active travel more attractive and accessible. This positive impact could be emphasised with a low-speed relief road in place as most of the motor traffic would be removed from the village, resulting in a safer environment that is more attractive to pedestrians and cyclists. This option could contribute to activity levels by making active travel more attractive and accessible. This positive impact could be emphasised with a low-speed relief road in place as most of the motor traffic would be removed from the village, resulting in a safer environment that is more attractive to pedestrians and cyclists.	+++
		Safety and Confidence	This option will contribute to safety and confidence by addressing personal safety on roads and active travel routes for all users, and ensuring inclusive design of infrastructure. This positive impact will be emphasised with a low-speed relief road in place as most of the motor traffic would be removed from Llanbedr Village, including HGVs, resulting in a safer environment. COBALT analysis has demonstrated a saving of 6 KSI collisions.	+++
	Good for the environment	Carbon Emissions	This option has a very high infrastructure carbon impact of ~14,260 tCO2e, relative to the other options. Over 12,000 tCO2e of this impact is due to the 40-mph Low speed relief road. However, implementation of these measures could achieve a moderate avoidance (~ 20%) of user carbon emissions, during peak weekend hours.	--
		Biodiversity	Option 6 with the relief road focuses on making road safer through use of signage (slowing down speed limits), road markings (i.e., yellow box markings, parking restrictions) and restriction of HGV movement through Llandbedr village. It also incorporates the active travel improves as per Options 2,3 and 4. Additionally it includes updated welcome signage to the approach to Llanbedr with inclusion of attractive planting. The Option also includes a raised table within the A496 road design with planting areas. The relief road is designed to reduce traffic through Llandbedr village and limit access to HGVs. The construction of the relief road itself is currently designed so that it will impact Priority Habitats including lowland meadow, purple moor-grass and rush pastures and coastal saltmarsh. It will also lead to loss of semi-improved grassland of moderate species richness. The proposals also have potential to impact International Sites including Pen Llyn a'r Sarnau/Lleyn Peninsula and the Sarnau SAC, Northern Cardigan Bay/Gogledd Bae Ceredigion SPA and Meirion/Meirionnydd Oakwoods and Bat Sites SAC. Recommended further measures are outlined above. Overall, this Option is predicted to have a slight adverse effect on biodiversity based on the assumption that the mitigation, comepnasation and enhancement measures in the 2019 ES will be implemented for this scheme.	-
		Soils and Water	There could potentially be some minor impacts on the water environment and surrounding land as part of this package, particularly in association with the construction of the proposed low-speed relief road, pedestrian crossings, and active travel infrastructure. Ground excavation associated with these interventions may give rise to short-term disturbance. Ground disturbance associated with new shared-use paths, widened footways, bus stop improvements, and informal streetscape enhancements could lead to the need for further assessment of land quality. In particular, soft landscaping areas such as those involving new planting around the village centre or behind reinstated highway boundaries, may present a risk of exposure to underlying soil contaminants or increased infiltration to potentially impacted groundwater. However the presence of groundwater needs confirmation, as the superficial and bedrock is secondary Aquifer type and igneous rock in nature. Materials used in these landscaped areas must therefore be verified as chemically suitable for their end use, and low-maintenance, native planting should be prioritised. There is also a temporary risk of pollution to land during construction through sediment-laden runoff or accidental spills, particularly where works are located near existing drainage systems or culverted routes. These risks can be effectively managed through the application of best practice construction management measures, including appropriate containment, erosion control, and material handling protocols. Overall, while a number of the proposed interventions may interact with the soil conditions, it is anticipated that with the implementation of appropriate controls and detailed design measures, any risks or impacts could be effectively managed.	0
		Waste	This option would generate large quantities of waste during construction in the form of redundant materials and a significant amount vegetation as a result of clearance from site. Provided construction methods are employed in order to achieve the reuse/recycling targets for construction and demolition waste, no waste is left on site, and waste is only transported by a registered waste carrier to a suitably licensed waste management facility, potential impacts would be minimised. As part of the 2019 ES, with mitigations in place including the implementation of a SWMP re-use of material on site, identification of local suppliers and implementation of best practice site methods for storage/processing of materials as stipulated in a CEMP, impacts were assessed to be minor. In the operation phase, maintenance work to the road may generate waste,	-
	Good for economy and places	Cohesive communities	This option helps to reduce traffic dominance along the A496 and through the village, by reducing speeds and implementing parking restrictions. It could therefore contribute to creating calmer, safer streets that enhance opportunities for connection and community cohesion. A low-speed relief road could provide the most significant contribution toward achieving this. Car parking signage for Shell Island visitors also responds to the specific needs of the community. Welcome signage, delivery lockers, cycle parking and public realm improvements all contribute to improving community cohesion. Through providing improved pedestrian and cyclist infrastructure - such as safe, accessible pavements and crossings - the active travel improvements contribute to the creation of walkable environments which encourage interaction and supports mobility for all users.	+++
		Innovation	Whilst public transport services departure boards are included within this option, this is not considered to provide a significant contribution to innovation.	0
		Distribution of goods	A low-speed relief road could enable HGVs to be restricted from passing through the village, with freight traffic instead diverted onto the new route. This diversion would improve delivery efficiency by reducing delays and allowing for more fuel-efficient and reliable journeys. By also improving active travel infrastructure which could be utilised for deliveries within Llanbedr village, these measures could contribute to creating a more sustainable system of distributing goods. Delivery lockers could also support this.	++
		Affordability	By diverting traffic away from Llanbedr village and creating a safer, more pleasant environment for pedestrians and cyclists, when paired with active travel improvements, a low-speed relief road could encourage uptake of low-cost travel options such as walking and cycling.	++
	Good for culture and the Welsh language	Welsh language	This option could support the Welsh-speaking population in Llanbedr and surrounding areas by enhancing access to local jobs, services, and tourism. Of particular note, one of the measures included in this option package supports access to a Welsh language primary school.	++
		Arts, sports & culture	By improving safety and active travel provision, this option could enable more people to access arts, sports, natural and cultural heritage sites in the area using sustainable transport. A low-speed relief road could further support this by removing traffic from Llanbedr village, contributing to a safer environment that could encourage the uptake of sustainable modes.	+++
		Historic environment	The construction of a new relief road has the potential to physically impact 32 non-designated historic assets, the majority of which date to the post-medieval and modern periods. There will also be an impact on the Arduwy Historic Landscape. As part of the 2019 ES, an ASIDOHL2 was completed and concluded that the two HLCAs that the road would be mostly within, would be directly impacted. With the mitigation of an intensive watching brief, the 2019 ES identified moderate adverse residual impacts to the	--
Study Objectives	Reduce the need to travel for key services and		The proposal to introduce delivery lockers could reduce the need to travel to nearby locations to collect parcels and deliveries.	+
	Improve safety for all transport modes		This option is expected to provide a moderate contribution to this study objective, with an accident volume benefit of 5.7 personal injury accidents avoided over 60 years.	+++
	Prioritise journeys on-foot and by cycle within Llanbedr village		Active travel audits conducted on the proposed walking routes that form part of this option indicate that all four routes would pass, achieving a 'desirable score'. These measures score highly due to the anticipated reduction in traffic flows as a result of the relief road being in place (as it is proposed in combination with active travel improvements as part of this option). The relief road allows for the road space in the village to be redesigned to better accommodate, and prioritise, active travel and provide higher standard infrastructure - for example, providing an appropriately wide footway across the Afon Artro Bridge which would not be feasible under alternative scenarios without the relief road. Active travel audits conducted on the proposed cycling routes that form part of this option indicate that all four of the cycling routes considered achieve a pass score, with two achieving a 'desirable score'. Whilst some shared use sections of the route are proposed to be below the 2.5m desirable minimum, with the relief road in place, there is less shared-use prvision for cyclists and instead, a greater extent of the cycling provision is on-carriageway. These measures could therefore have a large beneficial impact, as all routes pass the audits.	+++
	Improve access by sustainable modes to and from Llanbedr and areas to the west of the village		The active travel route proposed along the A496 as part of this option extends to the existing shared use path in Pensarn to the north, and therefore contributes to improving access by sustainable modes to and from Llanbedr. Paired with a low-speed relief road which would divert through-traffic from the village centre, the village could be percieved as safer and more attractive for walking and cycling and more appropriate infrastructure could be implemented, further improving access. It could also provide a benefit to bus services that route along the existing A496 by ensuring that they are not adversely impacted by journey time delay and inconsistency within the village.	+++
	Enhance the local built environment to improve the sense of place and contribute to the vibrancy of the village		By combining a low-speed relief road with safety, active travel, placemaking and public realm improvements, this option provides a significant contribution to the vibrancy of the village and sense of place. In particular, with a relief road in place, the Afon Artro Bridge is proposed for active travel use and access only, which creates a safer and more inviting space for pedestrians and cyclists, encouraging community use of the village centre.	+++
	Reduce the impact of the visitor economy on the road network		If implemented, these measures could have a large beneficial impact, resulting in less than 5% increase in travel times along the A496 during peak times for the visitor economy, compared with a comparable out of season period. As the visitor economy significantly increases traffic demand along the A496, the removal of the vast majority of trips from the centre of Llanbedr village could significantly reduce the impact of the visitor economy locally. Of particular note, Shell Island is a significant generator of visitor trips in the local area, which contributes to issues at the A496 Afon Artro bridge and A496/Mochras Road junction. On this basis, removing the need for visitors to travel through Llanbedr to access Shell Island will significantly reduce the impact of the visitor economy on the local road network.	++
	Improve the resilience of the transport network in and around Llanbedr		The safety improvements - speed management, parking restrictions, restrict HGV movements, raised table - could contribute to reducing the frequency of collisions and incidents along the A496. Active travel improvements could also contribute to reducing the frequency of collisions and incidents along the A496 by reducing conflict between modes. A low-speed relief road could improve the resilience of Llanbedr's road network by reducing the flow of traffic that is required to route via the Afon Artro Bridge, therefore reducing the potential infrastructure failure risks. It provides an alternative route in the event of a disruption on the A496, and can ensure safety in design. Restricting motor vehicle access across the bridge while maintaining it for public transport enhances the reliability of public transport services.	+++
	Reduce the impact of climate change on the local community		Review of NRW flood maps identifies that the Low-Speed Relief Road (LSRR) passes through both fluvial and tidal Flood Zone 2 and 3, as well as crossing earth flood defence embankments adjacent to the Afon Artro and its tributary to the north. The alignment of the flood defence embankments will be maintained. However consultation has not yet been undertaken with NRW to seek agreement of the proposals or understand any future improvements/works that may be required for maintenance or to manage the potential effects of climate change. It is however considered likely that the LSRR can accommodate specified requirements as the design of the option progresses. Any loss of fluvial floodplain (and potentially tidal floodplain) will require compensation and any increase in flood risk to third parties will require mitigation. It is not yet clear where compensation will be provided nor the nature of other mitigation that may be required. Additionally, the new footpath adjacent to the Afon Artro is also located with fluvial Flood Zones 2 and 3. It is currently unknown if the new footpath will be flush with existing ground level or raised above existing ground level. A raised structure would result in loss of floodplain storage and potentially increase flood risk elsewhere. Implementation of these measures could achieve a moderate avoidance (~ 20%) of user carbon emissions, during peak weekend hours. The overall impact of this option on this study objective is therefore considered to be neutral given the competing impacts on flood risk and user emissions. It is however acknowledged that mitigation is required to address impacts on the environment.	0

Option	7
Option Description	Mochras Road: Safety Improvements

Impact Areas			Summary of Impacts	Assessment Score
WRS Ambitions	Good for people and communities	Equality	The proposals are likely to have a positive impact on some of the protected characteristics, although the impacts are expected to be slight. The positive impacts are likely to be on the disability and pregnancy and maternity protected characteristics through reduced traffic speeds, making it safer for those with mobility impairments. The proposals are not likely to have a significant negative impact on the protected characteristics overall.	+
		Health	A reduction in the speed-limits and the traffic calming measures have the potential to reduce some vehicle emissions. Therefore, this option may lead to minor improvements in air quality. The reduction of the speed limit to 30mph from Llanbedr Railway Station to Shell Island, and the extension of the 20mph speed limit, are anticipated to have slight beneficial impacts on noise. This option is unlikely to impact on activity levels.	+
		Safety and Confidence	This option will contribute to safety and confidence by addressing personal safety on the roads for all road users.	+
	Good for the environment	Carbon Emissions	This option has a very low infrastructure carbon impact of ~10 tCO2e, relative to the other options. This is due to the very minimal interventions required, including line markings or signage. Similarly, implementation of these measures is likely to result in negligible - no change (< 1%) in user carbon emissions, during peak weekend hours.	0
		Biodiversity	Option 7 focuses on making road safer through use of signage (slowing down speed limits) and traffic calming (i.e., chicanes, parking restrictions). Option 7 has the potential to create disturbance to nocturnal species including commuting bats unless a sensitive lighting design is implemented. There are likely to be benefits to wildlife through reduced potential for wildlife-related road traffic collisions as a result of slower speed limits.	0
		Soils and Water	There are no deemed direct benefits nor disbenefits to soil, water or contaminated land from the proposed traffic management interventions at this stage, given the limited nature of the works. The interventions are predominantly surface-level and are not anticipated to result in any significant ground disturbance or alteration to existing hydrological or land conditions.	0
		Waste	This option may generate small amounts of waste during construction in the form of redundant signage and other materials. Provided no waste is left on site, and waste is only transported by a registered waste carrier to a suitably licensed waste management facility, this option will likely result in negligible impacts. No impacts are anticipated in the operation phase. Overall, this option is anticipated to have a neutral impact on waste.	0
	Good for economy and places	Cohesive communities	This option helps to reduce traffic dominance along Mochras Road, through reducing speeds and implementing parking restrictions, and could therefore contribute to creating calmer, safer streets that enhance opportunities for connection and community cohesion. However, this would not have as significant as an impact on community cohesion, as although Mochras Road plays a valuable role as a key route connecting to the village, it is not considered a central destination/the community hub in its own right. Investments in the core village area are likely to deliver stronger social benefits.	0
		Innovation	These measures are not considered to provide a significant contribution to innovation.	0
		Distribution of goods	This option does not contribute to creating a more sustainable system of distributing goods in Wales.	0
		Affordability	This option does not contribute to making sustainable transport options more affordable.	0
	Good for culture and the Welsh language	Welsh language	This option is unlikely to have an impact on the Welsh Language.	0
		Arts, sports & culture	This option could enable more people to access arts, sports, natural and cultural heritage sites in the area using sustainable transport.	+
		Historic environment	The minor alterations to the alterations to the street furniture and road painting are not expected to have a physical or setting impact to any of the historic assets in the study area.	0
Study Objectives	Reduce the need to travel for key services and employment		These measures will not impact on the need for people to travel.	0
	Improve safety for all transport modes		This option is not expected to provide a significant benefit to this study objective.	+
	Prioritise journeys on-foot and by cycle within Llanbedr village		These measures are not considered to contribute to prioritising journeys on-foot and by cycle. The walking and cycling provision along Mochras Road would remain as existing, which does not pass Active Travel Audits.	0
	Improve access by sustainable modes to and from Llanbedr and areas to the west of the village		Whilst these measures are key to improving safety along Mochras Road, without activel travel improvements, their contribution to improving access to the west of the village by sustainable modes is limited.	0
	Enhance the local built environment to improve the sense of place and contribute to the vibrancy of the		This option does not propose direct improvements to the village, only along Mochras Road, and therefore has a neutral impact on the sense of place and vibrancy of the village.	0
	Reduce the impact of the visitor economy on the road network		If implemented, these measures could have a large adverse impact, resulting in more than a 30% increase in travel times along the A496 during peak times for the visitor economy, compared with a comparable out of season period.	-
	Improve the resilience of the transport network in and around Llanbedr		These measures - speed management, parking restrictions, traffic calming measures - could contribute to reducing the frequency of collisions and incidents along Mochras Road. However, the overall impact is considered negligible.	0
	Reduce the impact of climate change on the local community		The option is not expected to have any significant impact on water environment or flood risk receptors. Implementation of this option is likely to result in negligible - no change (< 1%) in user carbon emissions, during peak weekend hours. Therefore, the overall impact of this option on this study objective, when considering both flood risk and user emissions, is considered to be neutral.	0



Option	8
Option Description	Mochras Road: Safety & Active Travel Improvements

Impact Areas			Summary of Impacts	Assessment Score
WTS Ambitions	Good for people and communities	Equality	The proposals are likely to have a positive impact on some of the protected characteristics, although the impacts are expected to be slight to moderate. The largest positive impact is likely to be on the disability, age and pregnancy and maternity protected characteristics, largely driven by the proposed active travel infrastructure supporting onwards journeys to the railway station. The proposals are not likely to have a significant negative impact on the protected characteristics overall.	++
		Health	A reduction in the speed-limits and the traffic calming measures have the potential to reduce some vehicle emissions. Therefore, this option may lead to minor improvements in air quality. The reduction of the speed limit to 30mph from Llanbedr Railway Station to Shell Island, and the extension of the 20mph speed limit, are anticipated to have slight beneficial impacts on noise. This option could contribute to acitivity levels by making active travel more attractive and accessible within Llanbedr village.	+
		Safety and Confidence	This option will contribute to safety and confidence by addressing personal safety on roads and active travel routes for all users, and ensuring inclusive design of infrastructure.	+
	Good for the environment	Carbon Emissions	This option has a low infrastructure carbon impact of ~700 tCO2e, relative to the other options. Implementation of these measures is likely to result in negligible - no change (< 1%) in user carbon emissions, during peak weekend hours.	+
		Biodiversity	Option 8 includes road safety measures as per Option 7 but also includes proposals for active travel along Maes Artro, Mochras Road and the road connecting Llanbedr Railway Station and Shell Island. In some cases, road widening and/or utilisation of road verges/field margins for active travel elements i.e. cycle path/pedestrian routes. The proposals also include the construction of an active travel bridge over the Artro River. Overall, habitat loss is anticipated to enable Option 8 and currently no habitat replacement is built into the design (although this has been recommended above). The option also has the potential to impact the Afon Artro, commuting and foraging bats and otter, and International Sites associated with the river. Overall, this Option is predicted to have a slight adverse effect on biodiversity based on current ecological information available	-
		Soils and Water	There could potentially be some minor impacts to the land environment as part of this package of measures, primarily associated with resurfacing, the introduction of chicanes, lighting infrastructure, and new active travel routes. Vegetation clearance and ground works required to implement traffic calming, shared-use paths, and a new active travel bridge may result in limited soil disturbance, although these impacts are expected to be temporary and can be effectively managed through best practice construction methods. The development of shared-use and pedestrian-only routes on existing private tracks and carriageways may require regrading and resurfacing, which could expose soils or interact with any underlying contaminants, however there is no surrounding land use mapped. Any materials introduced for soft landscaping, resurfacing, or structural works should be confirmed as chemically suitable for their intended use, especially in areas with increased pedestrian exposure. With these considerations, it is anticipated that any risks can be effectively managed at the detailed design and construction stages, ensuring a balance between safety improvements and environmental protection.	0
		Waste	This option may generate small amounts of waste during construction in the form of redundant signage and other materials. Provided no waste is left on site, and waste is only transported by a registered waste carrier to a suitably licensed waste management facility, this option will likely result in negligible impacts. No impacts are anticipated in the operation phase. Overall, this option is anticipated to have a neutral impact on waste.	0
	Good for economy and places	Cohesive communities	This option helps to reduce traffic dominance along Mochras Road, by reducing speeds and implementing parking restrictions. It could therefore contribute to creating calmer, safer streets that enhance opportunities for connection and community cohesion. Through providing improved pedestrian and cyclist infrastructure - such as safe, accessible pavements and crossings - the active travel improvements contribute to the creation of walkable environments which encourage interaction and supports mobility for all users. However, this would not have as significant as an impact on community cohesion, as although Mochras Road plays a valuable role as a key route connecting to the village, it is not considered a central destination/the community hub in its own right. Investments in the core village area are likely to deliver stronger social benefits.	0
		Innovation	These measures are not considered to provide a significant contribution to innovation.	0
		Distribution of goods	By improving active travel infrastructure which could be utilised for deliveries to the West of Llanbedr, this option could contribute to creating a more sustainable system of distributing goods in Wales.	+
		Affordability	This option may contribute to affordability as improving active travel infrastructure could allow people to use low-cost travel modes such as walking and cycling, making affordable sustainable travel more viable.	+
	Good for culture and the Welsh language	Welsh language	This option could support the Welsh-speaking population in Llanbedr and surrounding areas by enhancing access to local jobs, services, and tourism.	+
		Arts, sports & culture	By improving safety and active travel provision, this option could enable more people to access arts, sports, natural and cultural heritage sites in the area using sustainable transport.	++
		Historic environment	The active travel improvements, using routes already in existence or through areas where there are no known archaeological remains, with the exception of the site of a modern blast shelter (PRN90100). Therefore, no impacts are anticipated.	0
Study Objectives	Reduce the need to travel for key services and		This option will not impact on the need for people to travel.	0
	Improve safety for all transport modes		This option is expected to provide a slight contribution to this study objective.	+
	Prioritise journeys on-foot and by cycle within Llanbedr village		Active travel audits conducted on the proposed walking routes that form this option indicate that they would pass, with one of the two achieving a 'desirable score'. Active travel audits conducted on the proposed cycling routes that form part of this option indicate that one of the cycling routes considered achieves a pass score (Station to Shell Island), however the other fails (Llanbedr Village to the Station). In isolation, these measures could therefore have a slight beneficial impact, as some routes pass and some routes fail. However, in the context of this study objective which considers journeys within the village, this option has no overall positive impact as it proposes improvements along Mochras Road only.	0
	Improve access by sustainable modes to and from Llanbedr and areas to the west of the village		The active travel route proposed along Mochras Road as part of this option contributes to improving access by sustainable modes to the west of the village.	++
	Enhance the local built environment to improve the sense of place and contribute to the vibrancy of the		This option does not propose direct improvements to the village, only along Mochras Road, and therefore has a neutral impact on the sense of place and vibrancy of the village.	0
	Reduce the impact of the visitor economy on the road network		If implemented, these measures could have a large adverse impact, resulting in more than a 30% increase in travel times along the A496 during peak times for the visitor economy, compared with a comparable out of season period.	-
	Improve the resilience of the transport network in and around Llanbedr		These measures - speed management, parking restrictions, traffic calming measures - could contribute to reducing the frequency of collisions and incidents along Mochras Road. Active travel improvements could also contribute to reducing the frequency of collisions and incidents along Mochras Road by reducing conflict between modes. However, the overall impact is considered negligible.	0
	Reduce the impact of climate change on the local community		The proposed active travel route is located within fluvial and tidal Flood Zones 2 and 3. It is currently unknown if the new footpath will be flush with existing ground level or raised above existing ground level. A raised structure would result in loss of floodplain storage and potentially increase flood risk elsewhere. A low significance adverse effect is considered appropriate at this stage. The new footpath adjacent to the Afon Artro may result in loss of riparian habitat adjacent to the watercourse. It is assumed the footpath will be set back from the banks of the watercourse and result in negligible effect to hydromorphological properties. Implementation of these measures are likely to lead to negligible - no change (< 1%) in user carbon emissions, during peak weekend hours. Therefore, the overall impact of this option on this study objective, when considering both flood risk and user emissions, is considered to be neutral.	0



Option	9
Option Description	Mochras Road: Safety Improvements & Low-Speed Relief Road

Impact Areas			Summary of Impacts	Assessment Score
WTS Ambitions	Good for people and communities	Equality	The proposals are likely to have a positive impact on some of the protected characteristics, although the impacts are expected to be slight. Positive impacts are likely to be on the disability and pregnancy and maternity protected characteristics due to the reduction in traffic volume and safety improvements. The proposals are not likely to have a significant negative impact on the protected characteristics overall.	+
		Health	The low-speed relief road has the potential to reduce congestion and may improve air quality. A reduction of speed limits and the traffic calming measures have the potential to reduce some vehicle emissions. This option therefore could lead to substantial benefits. Due to the expected reduction in traffic flow along the A496 with a road in place, the anticipated noise impact during operation is considered beneficial within the village area. Predicted noise levels on the existing A496 road show an approximate reduction of 10 dB compared to the current levels on the existing A496 road. The reduction of the speed limit to 30mph from Llanbedr Railway Station to Shell Island, and the extension of the 20mph speed limit are also anticipated to be beneficial. This option could reduce traffic demand along the existing A496 through Llanbedr by re-routing most traffic along the new low-speed relief road, therefore enabling active travel journeys to be undertaken more safely and effectively within the village.	++
		Safety and Confidence	This option will contribute to safety and confidence by addressing personal safety on the roads for all road users. This positive impact could be emphasised with a low-speed relief road in place as most of the motor traffic would be removed from Llanbedr Village, including HGVs, resulting in a safer environment. COBALT analysis has demonstrated a saving of 3 KSI collisions.	++
	Good for the environment	Carbon Emissions	This option has a very high infrastructure carbon impact of ~12,420 tCO2e, relative to the other options. Over 12,000 tCO2e of this impact is due to the 40-mph Low speed relief road, however this measure could achieve a moderate avoidance of user carbon emissions, during peak weekend hours.	--
		Biodiversity	Option 9 with the relief road focuses on making road safer through use of signage (slowing down speed limits) and traffic calming (i.e., chicanes). The relief road is designed to reduce traffic through Llandbedr village. The construction of the relief road itself is currently designed so that it will impact Priority Habitats including lowland meadow, purple moor-grass and rush pastures and coastal saltmarsh. It will also lead to loss of semi-improved grassland of moderate species richness. The proposals also have potential to impact International Sites including Pen Lyn a'r Sarnau/Lleyn Peninsula and the Sarnau SAC, Northern Cardigan Bay/Gogledd Bae Ceredigion SPA and Meirion/Meirionnydd Oakwoods and Bat Sites SAC. Recommended further measures are outlined. Overall, this Option is predicted to have a slight adverse effect on biodiversity based on the assumption that the mitigation, comepnasation and enhancement measures in the 2019 ES will be implemented for this scheme.	-
		Soils and Water	There could potentially be some impact to the land quality associated with the proposed construction of the relief road and associated traffic calming measures. The development involves the introduction of a new 40mph relief road crossing the River Artro, as well as the installation of chicanes and lighting along Mochras Road. These interventions may require vegetation clearance and minor ground disturbance, particularly in areas where structural works are needed to support the new road or chicane foundations. Ground investigation will be required to fully understand ground conditions and suitability of material for reuse from cuttings into embankment fill to ensure the project is sustainable. Where ground disturbance is necessary, particularly for new road alignments or bridge abutments, consideration should be given to potential risks from contaminated land. This includes the possibility of mobilising any existing contamination or introducing new exposure pathways through soft landscaping or soil infiltration. Any materials used in road or landscape construction should be chemically appropriate for their end use and designed to prevent contamination migration. It is anticipated that with the implementation of standard mitigation measures and careful design, any risks to soil, water, or groundwater can be effectively managed as part of the overall scheme.	0
		Waste	This option would generate large quantities of waste during construction in the form of redundant materials and a significant amount vegetation as a result of clearance from site. Provided construction methods are employed in order to achieve the reuse/recycling targets for construction and demolition waste, no waste is left on site, and waste is only transported by a registered waste carrier to a suitably licensed waste management facility, potential impacts would be minimised. As part of the 2019 ES, with mitigations in place including the implementation of a SWMP re-use of material on site, identification of local suppliers and implementation of best practice site methods for storage/processing of materials as stipulated in a CEMP, impacts were assessed to be minor. In the operation phase, maintenance work to the road	-
	Good for economy and places	Cohesive communities	This option helps to reduce traffic dominance along Mochras Road, by reducing speeds and implementing parking restrictions. It could therefore contribute to creating calmer, safer streets that enhance opportunities for connection and community cohesion. A low-speed relief road could provide the most significant contribution toward achieving this. However, this option is not considered to have as significant as an impact on community cohesion, as although Mochras Road plays a valuable role as a key route connecting to the village, it is not considered a central destination/the community hub in its own right. Investments in the core village area are likely to deliver stronger social benefits.	+
		Innovation	These measures are not considered to provide a significant contribution to innovation.	0
		Distribution of goods	A low-speed relief road could enable HGVs to be restricted from passing through the village, with freight traffic instead diverted onto the new route. This diversion would improve delivery efficiency by reducing delays and allowing for more fuel-efficient and reliable journeys.	+
	Good for culture and the Welsh language	Affordability	By diverting traffic away from Llanbedr village and creating a safer, more pleasant environment for pedestrians and cyclists, a low-speed relief road could encourage greater uptake of low-cost travel options such as walking and cycling. However, without being paired with active travel infrastructure improvements in the village, its contribution to affordability is more limited.	+
		Welsh language	This option could support the Welsh-speaking population in Llanbedr and surrounding areas by enhancing economic opportunities, improving access to jobs, services, and tourism.	+
		Arts, sports & culture	By improving safety, this option could enable more people to access arts, sports, natural and cultural heritage sites in the area using sustainable transport. A low-speed relief road could further support this by removing traffic from Llanbedr village, contributing to a safer environment that could encourage the uptake of sustainable modes.	++
		Historic environment	The construction of a new relief road has the potential to physically impact 32 non-designated historic assets, the majority of which date to the post-medieval and modern periods. There will also be an impact on the Arduwy Historic Landscape. As part of the 2019 ES, an Assessment of the Significance of the Impact of Development on Historic Landscape Areas on the Register of Landscapes of Historic Interest in Wales (ASIDOHL2) was completed and concluded that the two Historic	--
Study Objectives	Reduce the need to travel for key services and		This option will not impact on the need for people to travel.	0
	Improve safety for all transport modes		This option is expected to provide a moderate contribution to this study objective, with an accident volume benefit of 3.2 personal injury accidents avoided over 60 years.	++
	Prioritise journeys on-foot and by cycle within Llanbedr village		Whilst routing traffic to the west of the village could reduce demand along the A496, and allow for road space in the village to be redesigned to better accommodate, and prioritise, active travel, this option is not paired with active travel improvements and therefore the walking and cycling provision within the village and along Mochras Road would remain as existing, which does not pass Active Travel Audits. Furthermore, whilst the 'safety and other improvements' could ensure safety for pedestrians and cyclists along Mochras Road, they are not considered to contribute to prioritising journeys on-foot and by cycle.	0
	Improve access by sustainable modes to and from Llanbedr and areas to the west of the village		The proposed new road contributes to the objective by reducing through-traffic within Llanbedr, thereby improving traffic conditions and creating opportunities for reallocating road space. For this reason, it could provide a benefit to bus services that route along the existing A496 through ensuring they are not adversely impacted by journey time delay and inconsistency within the village. However, paired with safety enhancements only, this option does not directly improve sustainable access unless paired with supporting active travel measures. Its contribution is therefore limited in terms of meeting this study objective.	+
	Enhance the local built environment to improve the sense of place and contribute to the vibrancy of the		This option does not propose direct improvements to the village, only along Mochras Road, however the proposed low-speed relief road could help to create a more pleasant, walkable and community-orientated village centre.	+
	Reduce the impact of the visitor economy on the road network		If implemented, these measures could have a large beneficial impact, resulting in less than 5% increase in travel times along the A496 during peak times for the visitor economy, compared with a comparable out of season period. As the visitor economy significantly increases traffic demand along the A496, the removal of the vast majority of trips from the centre of Llanbedr village could significantly reduce the impact of the visitor economy locally. Of particular note, Shell Island is a significant generator of visitor trips in the local area, which contributes to issues at the A496 Afon Artro bridge and A496/Mochras Road junction. On this basis, removing the need for visitors to travel through Llanbedr to access Shell Island will significantly reduce the impact of the visitor economy on the local road network.	++
	Improve the resilience of the transport network in and around Llanbedr		Whilst safety improvements - speed management, traffic calming measures - could contribute to reducing the frequency of collisions and incidents, a low-speed relief road could improve the resilience of Llanbedr's road network by reducing the flow of traffic that is required to route via the Afon Artro Bridge, therefore reducing the potential infrastructure failure risks. It provides an alternative route in the event of a disruption on the A496, and can ensure safety in design. Restricting motor vehicle access across the bridge while maintaining it for public transport enhances the reliability of public transport services.	+++
	Reduce the impact of climate change on the local community		Review of NRW flood maps identifies that the Low-Speed Relief Road (LSRR) passes through both fluvial and tidal Flood Zone 2 and 3, as well as crossing earth flood defence embankments adjacent to the Afon Artro and its tributary to the north. The alignment of the flood defence embankments will be maintained however consultation has not yet been undertaken with NRW to seek agreement of the proposals or understand any future improvements/works that may be required for maintenance or to manage the potential effects of climate change. It is however considered likely that the LSRR can accommodate specified requirements as the design of the option progresses. Any loss of fluvial floodplain (and potentially tidal floodplain) will require compensation and any increase in flood risk to third parties will require mitigation. It is not yet clear where compensation will be provided nor the nature of other mitigation that may be required. Implementation of these measures could achieve a moderate avoidance of user carbon emissions, during peak weekend hours, attributed to the low speed relief road. The overall impact of this option on this study objective is therefore considered to be neutral given the competing impacts on flood risk and user emissions. It is however acknowledged that mitigation is required to address impacts on the environment.	0



Option	10
Option Description	Mochras Road: Safety, Active Travel Improvements & Low-speed Relief Road

Impact Areas			Summary of Impacts	Assessment Score
WTS Ambitions	Good for people and communities	Equality	The proposals are likely to have a positive impact on some of the protected characteristics, although the impacts are expected to be slight to moderate. The largest positive impact is likely to be on the disability, age and pregnancy and maternity protected characteristics, largely driven by the proposed active travel infrastructure supporting onwards journeys to the railway station. The proposals are not likely to have a significant negative impact on the protected characteristics overall.	++
		Health	The low-speed relief road has the potential to reduce congestion and may improve air quality. A reduction of speed limits and the traffic calming measures have the potential to reduce some vehicle emissions. This option therefore could lead to substantial benefits. Due to the expected reduction in traffic flow along the A496 with a road in place, the anticipated noise impact during operation is considered beneficial within the village area. Predicted noise levels on the existing A496 road show an approximate reduction of 10 dB compared to the current levels on the existing A496 road. The reduction of the speed limit to 30mph from Llanbedr Railway Station to Shell Island, and the extension of the 20mph speed limit are also anticipated to be beneficial.  This option could contribute to activity levels by making active travel more attractive and accessible. This positive impact could be emphasised with a low-speed relief road in place as most of the motor traffic would be removed from the section of Mochras Road that connects to Llanbedr Village, resulting in a safer environment that is more attractive to pedestrians and cyclists.  The option has been assessed as having a moderate beneficial impact on activity levels, rather than a significant beneficial one, as the proposed interventions are located along Mochras Road. While this road provides a key connection to the village, the majority of trip attractors and generators are located within the village itself, limiting the option's influence on overall activity levels.	++
		Safety and Confidence	This option will contribute to safety and confidence by addressing personal safety on roads and active travel routes for all users, and ensure inclusive design of infrastructure. This positive impact could be emphasised with a low-speed relief road in place as most of the motor traffic would be removed from Llanbedr Village and the eastern section of Mochrad Road that connects to the village, including HGVs, resulting in a safer environment. COBALT analysis has demonstrated a saving of 3 KSI collisions.	+++
	Good for the environment	Carbon Emissions	This option has a very high infrastructure carbon impact of ~13,130 tCO <sub>2</sub> e, relative to the other options. Over 12,000 tCO <sub>2</sub> e of this impact is due to the 40-mph Low speed relief road, however this measure could achieve a moderate avoidance of user carbon emissions, during peak weekend hours.	--
		Biodiversity	Option 10 with the relief road focuses on making road safer through use of signage (slowing down speed limits) and traffic calming (i.e., chicanes). The relief road is designed to reduce traffic through Llandbedr village. The construction of the relief road itself is currently designed so that it will impact Priority Habitats including lowland meadow, purple moor-grass and rush pastures and coastal saltmarsh. It will also lead to loss of semi-improved grassland of moderate species richness. The proposals also have potential to impact International Sites including Pen Llyn a'r Sarnau/Lleyn Peninsula and the Sarnau SAC, Northern Cardigan Bay/Gogledd Bae Ceredigion SPA and Meirion/Meirionnydd Oakwoods and Bat Sites SAC. Recommended further measures are outlined above. Overall, this Option is predicted to have a slight adverse effect on biodiversity based on the assumption that the mitigation, comepnsation and enhancement measures in the 2019 ES will be implemented for this scheme.	-
		Soils and Water	There could potentially be some impact on the soil and water environment associated with this package of works, particularly due to the proposed relief road crossing the River Artro, the installation of chicanes, and the re-surfacing and reconfiguration of existing routes for shared use and active travel. Vegetation clearance and minor ground disturbance may be required along sections of Mochras Road and the private access track, particularly where new footways, cycle routes, or structural changes (e.g., chicanes or realignment) are proposed. Any new planting should consider the use of native or low-maintenance species and be located to avoid obstruction of visibility or infrastructure such as CCTV. Where new soil or material is introduced, these should be tested to confirm their chemical suitability for their intended use to prevent mobilisation of contaminants to underlying groundwater or surface water. It is anticipated that with appropriate design and construction-phase controls, any potential environmental risks can be effectively managed, and the scheme may offer net benefits in terms of encouraging modal shift, reducing traffic congestion, and supporting sustainable, active travel within Llanbedr.	0
		Waste	This option would generate large quantities of waste during construction in the form of redundant materials and a significant amount vegetation as a result of clearance from site. Provided construction methods are employed in order to achieve the reuse/recycling targets for construction and demolition waste, no waste is left on site, and waste is only transported by a registered waste carrier to a suitably licensed waste management facility, potential impacts would be minimised. As part of the 2019 ES, with mitigations in place including the implementation of a SWMP re-use of material on site, identification of local suppliers and implementation of best practice site methods for storage/processing of materials as stipulated in a CEMP, impacts were assessed to be minor. In the operation phase, maintenance work to the road may	-
	Good for economy and places	Cohesive communities	This option helps to reduce traffic dominance along Mochras Road, by reducing speeds and implementing parking restrictions. It could therefore contribute to creating calmer, safer streets that enhance opportunities for connection and community cohesion. A low-speed relief road could provide the most significant contribution toward achieving this.  Through providing improved pedestrian and cyclist infrastructure - such as safe, accessible pavements and crossings - the active travel improvements contribute to the creation of walkable environments which encourage interaction and supports mobility for all users.  However, this would not have as significant as an impact on community cohesion, as although Mochras Road plays a valuable role as a key route connecting to the village, it is not considered a central destination/the community hub in its own right. Investments in the core village area are likely to deliver stronger social benefits.	++
		Innovation	These measures are not considered to provide a significant contribution to innovation.	0
		Distribution of goods	By improving active travel infrastructure which could be utilised for deliveries to the West of Llanbedr, this option could contribute to creating a more sustainable system of distributing goods. A low-speed relief road could enable HGVs to be restricted from passing through the village, with freight traffic instead diverted onto the new route. This diversion would improve delivery efficiency by reducing delays and allowing for more fuel-efficient and reliable journeys.	++
		Affordability	By diverting traffic away from Llanbedr village and creating a safer, more pleasant environment for pedestrians and cyclists, when paired with active travel improvements, a low-speed relief road could encourage uptake of low-cost travel options such as walking and cycling.	++
	Good for culture and the Welsh language	Welsh language	This option could support the Welsh-speaking population in Llanbedr and surrounding areas by enhancing economic opportunities, improving access to jobs, services, and tourism.	+
		Arts, sports & culture	By improving safety and active travel provision, this option could enable more people to access arts, sports, natural and cultural heritage sites in the area using sustainable transport. A low-speed relief road could further support this by removing traffic from Llanbedr village, contributing to a safer environment that could encourage the uptake of sustainable modes.	+++
		Historic environment	The construction of a new relief road has the potential to physically impact 32 non-designated historic assets, the majority of which date to the post-medieval and modern periods. There will also be an impact on the Ardufwy Historic Landscape. As part of the 2019 ES, an ASIDOHL2 was completed and concluded that the two HLCAs that the	--
Study Objectives	Reduce the need to travel for key services and	This option will not impact on the need for people to travel.	0	
	Improve safety for all transport modes	This option is expected to provide a moderate contribution to this study objective, with an accident volume benefit of 3.2 personal injury accidents avoided over 60 years.	++	
	Prioritise journeys on-foot and by cycle within Llanbedr village	Active travel audits conducted on the proposed walking routes that form this option indicate that they would pass, with one of the two achieving a 'desirable score'. Active travel audits conducted on the proposed cycling routes that form part of this option indicate that the two cycling routes considered achieve a pass score (Station to Shell Island and Llanbedr Village to the Station). By routing traffic to the west of the village and therefore reducing demand along the A496, the relief road could allow road space along the A496 and Mochras road to be redesigned to better accommodate, and prioritise, active travel. In isolation, these measures could therefore have a moderate beneficial impact, as all routes pass. However, in the context of this study objective which considers journeys within the village, this option has no overall positive impact as it proposes improvements along Mochras Road only.	0	
	Improve access by sustainable modes to and from Llanbedr and areas to the west of the village	The active travel route proposed along Mochras Road as part of this option contributes to improving access by sustainable modes to the west of the village. With a road, the section of Mochras Road closest to the village can be closed to motor vehicles. Pairing this with active travel improvements along this section means that access to the west of the village by walking and cycling is significantly improved compared to without, as pedestrians and cyclists are not required to interact with traffic. Given that the road could reduce traffic travelling through the village, this could also provide a benefit to bus services that route along the existing A496 through ensuring they are not adversely impacted by journey time delay and inconsistency within the village.	+++	
	Enhance the local built environment to improve the sense of place and contribute to the vibrancy	This option does not propose direct improvements to the village, only along Mochras Road, however the proposed low-speed relief road could help to create a more pleasant, walkable and community-orientated village centre.	+	
	Reduce the impact of the visitor economy on the road network	If implemented, these measures could have a large beneficial impact, resulting in less than 5% increase in travel times along the A496 during peak times for the visitor economy, compared with a comparable out of season period.  As the visitor economy significantly increases traffic demand along the A496, the removal of the vast majority of trips from the centre of Llanbedr village could significantly reduce the impact of the visitor economy locally. Of particular note, Shell Island is a significant generator of visitor trips in the local area, which contributes to issues at the A496 Afon Artro bridge and A496/Mochras Road junction. On this basis, removing the need for visitors to travel through Llanbedr to access Shell Island will significantly reduce the impact of the visitor economy on the local road network.	++	
	Improve the resilience of the transport network in and around Llanbedr	The safety improvements - speed management, traffic calming measures - could contribute to reducing the frequency of collisions and incidents. By limiting vehicle access to the section of Mochras Road closest to the village, the active travel improvements could contribute to reducing the frequency of collisions and incidents by reducing conflict between between modes. A low-speed relief road could improve the resilience of Llanbedr's road network by reducing the flow of traffic that is required to route via the Afon Artro Bridge, therefore reducing the potential infrastructure failure risks. It provides an alternative route in the event of a disruption on the A496, and can ensure safety in design. Restricting motor vehicle access across the bridge while maintaining it for public transport enhances the reliability of public transport services.	+++	
	Reduce the impact of climate change on the local community	Review of NRW flood maps identifies that the Low-Speed Relief Road (LSRR) passes through both fluvial and tidal Flood Zone 2 and 3, as well as crossing earth flood defence embankments adjacent to the Afon Artro and its tributary to the north. The alignment of the flood defence embankments will be maintained. However consultation has not yet been undertaken with NRW to seek agreement of the proposals or understand any future improvements/works that may be required for maintenance or to manage the potential effects of climate change. It is however considered likely that the LSRR can accommodate specified requirements as the design of the option progresses. Any loss of fluvial floodplain (and potentially tidal floodplain) will require compensation and any increase in flood risk to third parties will require mitigation. It is not yet clear where compensation will be provided nor the nature of other mitigation that may be required. Implementation of these measures could achieve a moderate avoidance of user carbon emissions, during peak weekend hours, attributed to the low speed relief road. The overall impact of this option on this study objective is therefore considered to be neutral given the competing impacts on flood risk and user emissions. It is however acknowledged that mitigation is required to address impacts on the environment.	0	



Option	11
Option Description	Llanbedr Railway Station: Improvements to Existing Car Park

Impact Areas			Summary of Impacts	Assessment Score
WTS Ambitions	Good for people and communities	Equality	The proposals are likely to have a positive impact on some of the protected characteristics, although the impacts are expected to be slight to moderate. The largest positive impact is likely to be on the disability protected characteristic due to improved accessibility of car parking and journeys to the railway station. The proposals are not likely to have a significant negative impact on the protected characteristics overall.	+
		Health	This will not lead to any significant changes in road traffic and will not lead to a significant change in air quality. Noise impacts associated with this option are anticipated to be neutral. This option is unlikely to impact on activity levels.	0
		Safety and Confidence	This option could contribute to safety and confidence by ensuring inclusive design of infrastructure.	+
	Good for the environment	Carbon Emissions	Without the LSRR: the option will likely have a low infrastructure carbon impact and result in negligible - no change in user carbon emissions, during peak weekend hours. (0) With the LSRR: over 12,000 tCO2e infrastructure emissions are associated with the LCRR, as well as the impact of assets required for the other improvements. Any avoidance of user emissions would be largely attributed to the LSRR, as opposed to the station improvements. (-)	0
		Biodiversity	Option 11 focuses on utilising an existing car park and improving it through improved markings, electric car charging facilities, bike shelter facilities, benches and improved connection to the existing carriageway. There are no negative implications to ecology.	0
		Soils and Water	There could potentially be some minor impacts to the land environment as part of this package of measures, primarily associated with resurfacing. Ground disturbance is expected to be temporary and can be effectively managed through best practice construction methods. It is anticipated that any risks can be effectively managed at the detailed design and construction stage	0
		Waste	This option may generate waste during construction in the form of redundant materials and minor vegetation clearance from site. Provided no waste is left on site, and waste is only transported by a registered waste carrier to a suitably licensed waste management facility, this option will likely result in negligible impacts. No impacts are anticipated in the operation phase. Overall, this option is anticipated to have a neutral impact on waste.	+
	Good for economy and places	Cohesive communities	This option could improve access to public transport services, helping people to stay connected to jobs, services and social networks. This facility could also serve as a shared community asset, featuring EV charging, cycle parking and wayfinding/information.	+
		Innovation	These measures are not considered to provide a significant contribution to innovation.	0
		Distribution of goods	This option does not directly contribute to creating a more sustainable system of distributing goods in Wales.	0
		Affordability	This option does not contribute to making sustainable transport options more affordable.	0
	Good for culture and the Welsh language	Welsh language	This option could support the Welsh-speaking population in Llanbedr and surrounding areas by enhancing access to jobs, services, and tourism.	+
		Arts, sports & culture	This option could enable more people to access arts, sports, natural and cultural heritage sites in the area using sustainable transport.	++
		Historic environment	There are no known archaeological remains or listed buildings in the vicinity of the proposed car park. Improvements to an existing car park without the need to build a new one is preferred option.	0
Study Objectives	Reduce the need to travel for key services and employment		This option will not impact on the need for people to travel.	0
	Improve safety for all transport modes		This option is not expected to provide a significant benefit to this study objective.	0
	Prioritise journeys on-foot and by cycle within Llanbedr village		This option does not contribute to prioritising walking and cycling journeys within Llanbedr village. The walking and cycling routes within the village would remain as existing, which do not pass Active Travel Audits.	0
	Improve access by sustainable modes to and from Llanbedr and areas to the west of the village		This option could contribute to improving sustainable access to and from Llanbedr by making it easier for people to combine car and rail travel, reducing longer car journeys and generally improving access to Llanbedr Railway Station. The provision of cycle parking and better lighting contributes to encouraging access by sustainable modes to the station / the west of the village itself.	++
	Enhance the local built environment to improve the sense of place and contribute to the vibrancy of the village		This option does not propose direct improvements to the village, only along Mochras Road/Llanbedr Train Station, and therefore has a neutral impact on the sense of place and vibrancy of the village.	0
	Reduce the impact of the visitor economy on the road network		This option has no impact on the operation of the surrounding road network, including the A496, under either the with-road or without-road scenario, and therefore has a neutral impact on journey times. However, when tourists arrive in Llanbedr, this could play a key role in making it easier for them to access the train station, therefore promoting modal shift for secondary/local trips.	+
	Improve the resilience of the transport network in and around Llanbedr		Whilst this could contribute to reducing the frequency of collisions and incidents along Mochras Road by providing a safe space to park, it is considered to have a negligible impact.	0
	Reduce the impact of climate change on the local community		The proposed parking is located on the periphery of fluvial and tidal Flood Zones 2 and 3 of the Afon Artro. It is assumed that the infrastructure would be raised above existing ground level although some flooding may be permissible. This could result in loss of floodplain storage and potentially increase flood risk elsewhere and therefore further assessment will be required. However, as the area of proposed development looks to be in an area of local elevation the impacts are likely to be minimal.  This measure alone will have little to no impact on user carbon emissions in the local area.  Therefore, the overall impact of this option on this study objective, when considering both flood risk and user emissions, is considered to be neutral.	0

Option	12
Option Description	Llanbedr Railway Station: New Car Park

Impact Areas		Summary of Impacts		Assessment Score
WTS Ambitions	Good for people and communities	Equality	The proposals are likely to have a positive impact on some of the protected characteristics, although the impacts are expected to be slight. The largest positive impact is likely to be on the disability protected characteristic due to improved accessibility of car parking and journeys to the railway station. The proposals are not likely to have a significant negative impact on the protected characteristics overall.	+
		Health	This will not lead to any significant changes in road traffic and will not lead to a significant change in air quality. Noise impacts associated with this option are anticipated to be neutral. This option is unlikely to impact on activity levels.	0
		Safety and Confidence	This option could contribute to safety and confidence by ensuring inclusive design of infrastructure.	+
	Good for the environment	Carbon Emissions	Without the LSRR: the option will likely have a low infrastructure carbon impact and result in negligible - no change in user carbon emissions, during peak weekend hours. (0) With the LSRR: over 12,000 tCO2e infrastructure emissions are associated with the LCRR, as well as the impact of assets required for the other improvements. Any avoidance of user emissions would be largely attributed to the LSRR, as opposed to the station improvements. (--)	0
		Biodiversity	Option 12 focuses on creation of a new car park for Llanbedr Railway Station over existing grassland habitat. In the short term, loss of habitat to enable to works will lead to a negative impact. However, habitat replacement has been built into the design. Ensuring that habitat is replaced at appropriate ratios and at a higher condition e.g., improved species-richness, will lead to long term beneficial impact.	+
		Soils and Water	There could potentially be some minor impacts to the land environment as part of this package of measures, primarily associated with the new car park. Ground disturbance is expected to be temporary and can be effectively managed through best practice construction methods. Surface water runoff during construction could also pose a minor pollution risk to local watercourses (current stream will require culverting)—especially if weather conditions are poor or drainage is inadequate. However, these risks can be mitigated through the adoption of best practice construction methods and consideration of SuDS (Sustainable Drainage Systems) where feasible. It is anticipated that any risks can be effectively managed at the detailed design and construction stage.	0
		Waste	This option may generate small amounts of waste during construction in the form of redundant signage and other materials. Provided no waste is left on site, and waste is only transported by a registered waste carrier to a suitably licensed waste management facility, this option will likely result in negligible impacts. No impacts are anticipated in the operation phase. Overall, this option is anticipated to have a neutral impact on waste.	0
	Good for economy and places	Cohesive communities	This option could improve access to public transport services, helping people to stay connected to jobs, services and social networks. This facility could also serve as a shared community asset, featuring EV charging, cycle parking and wayfinding/information.	+
		Innovation	These measures are not considered to provide a significant contribution to innovation.	0
		Distribution of goods	This option does not directly contribute to creating a more sustainable system of distributing goods in Wales.	0
		Affordability	This option does not contribute to making sustainable transport options more affordable.	0
	Good for culture and the Welsh language	Welsh language	This option could support the Welsh-speaking population in Llanbedr and surrounding areas by enhancing access to jobs, services, and tourism.	+
		Arts, sports & culture	This option could enable more people to access arts, sports, natural and cultural heritage sites in the area using sustainable transport.	++
		Historic environment	There are no known archaeological remains or listed buildings in the vicinity of the proposed car park.	0
Study Objectives	Reduce the need to travel for key services and	This option will not impact on the need for people to travel.		0
	Improve safety for all transport modes	This option is not expected to provide a significant benefit to this study objective.		0
	Prioritise journeys on-foot and by cycle within Llanbedr village	This option does not contribute to prioritising walking and cycling journeys within Llanbedr village. The walking and cycling routes within the village would remain as existing, which do not pass Active Travel Audits.		0
	Improve access by sustainable modes to and from Llanbedr and areas to the west of the village	This option could contribute to improving sustainable access to and from Llanbedr by making it easier for people to combine car and rail travel, reducing longer car journeys and generally improving access to Llanbedr Railway Station. The provision of cycle parking and better lighting contributes to encouraging access by sustainable modes to the station / the west of the village itself.		++
	Enhance the local built environment to improve the sense of place and contribute to the vibrancy of the	This option does not propose direct improvements to the village, only along Mochras Road/Llanbedr Train Station, and therefore has a neutral impact on the sense of place and vibrancy of the village.		0
	Reduce the impact of the visitor economy on the road network	This option has no impact on the operation of the surrounding road network, including the A496, under either the with-road or without-road scenario, and therefore has a neutral impact on journey times. However, when tourists arrive in Llanbedr, this could play a key role in making it easier for them to access the train station, therefore promoting modal shift for secondary/local trips.		+
	Improve the resilience of the transport network in and around Llanbedr	Whilst this could contribute to reducing the frequency of collisions and incidents along Mochras Road by providing a safe space to park, it is considered to have a negligible impact.		0
	Reduce the impact of climate change on the local community	The proposed parking is located within the fluvial and tidal Flood Zones 2 and 3 of the Afon Artro. It is assumed that the infrastructure would be raised above existing ground level although some flooding may be permissible. This could result in loss of floodplain storage and potentially increase flood risk elsewhere and therefore further assessment will be required. A low significance adverse effect is considered appropriate at this stage. This measure alone will have little to no impact on user carbon emissions in the local area. Therefore, the overall impact of this option on this study objective, when considering both flood risk and user emissions, is considered to be slight adverse.		-