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Department for Infrastructure
An Roinn Bonneagair
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A5 WTC
Western Transport Corridor

A5 Western Transport Corridor (A5 WTC)

Appendix TNI - Theme Report:

Protected Species

21 July 2016

Appendix TNI - Theme Report: Protected Species

1. All measures described below will form part of the Works Information documentation supplied to construction contractors, and will be a contractually binding part of the Scheme delivery.

Otter

2. Northern Ireland is known to have one of the densest otter populations in Europe, with the species being well recorded throughout the A5WTC study area. As otter are known to use all watercourses within their extensive territories, at varying times, it has been concluded that otter could be present on any watercourse crossed by or adjacent to the Proposed Scheme (see Appendix TNI_Core Documents_9782_61981_Otter Appendix[1]).

Holts

3. The current scheme would require the loss of two confirmed holts, one at the Derg crossing and the other at Routing Burn.

4. Works which will result in the disturbance, damage or destruction of otter holts will require licensing by NIEA. Mitigation measures will include sensitive timing of works, replacement holt provision and suitable planting (see B1_Appendix TNI_9782_61981_Otter Mitigation).

5. Two further holts are located outside of the main works area, but in close proximity to the works, or in temporary works areas. These are the holt adjacent to Strabane Nature Reserve and the holt at the Fairy Water Crossing. Measures to protect these holts from disturbance or damage are specified in B1_Appendix TNI_9782_61981_Otter Mitigation, with information relating to the works in proximity of the Fairy Water holt shown on D_Appendix TNI_9782_61981_Fairy Water Holt.

Breeding Sites

6. Strabane Nature Reserve was identified by Dr Paul Chanin in 2008/9 as a highly suitable location for otter breeding. Evidence of otter entering the woodland was confirmed, however, the density of vegetation present precluded a detailed examination of the wood. The site has therefore been considered to be an otter breeding site, following the precautionary principle.

7. In order to safeguard otter that may breed within the site, an extensive pre-construction survey will be undertaken using camera traps to record otter entry and egress from the wood, with regular walkover surveys of the

[1] Please note that all reference documents will be publicly available on www.a5wtc.com from mid-August

woodland edge to ensure otter are not entering or leaving by an alternate location.

Fragmentation of habitat

8. Because otter have large territories, new road schemes that are insufficiently mitigated are likely to cause fragmentation.

9. During production of a draft Report to Inform an Appropriate Assessment, twenty-nine locations were identified for inclusion of measures to reconnect severed habitat. The measures identified were the provision of a suitable ledge within culverts, or provision of a dry tunnel adjacent to the culvert, with appropriate planting to guide otter to the tunnel entrance, and localised otter proof fencing to deter otter from moving onto the carriageway.

10. During assessment for the ES 2016, a further fifteen locations were identified for provision of otter ledges or tunnels.

11. Locations of these crossings are shown on Appendix TNI_Core Documents_9782_61981_Env Mitigation Figures[2]. In addition, there are twenty-two wildlife tunnels provided for badger and other species along the road which fulfil the requirements of an otter tunnel, and which are sufficiently close to watercourses that they can readily accommodate otter passage (see Appendix TNI_Core Documents_9782_61981_Env Mitigation Figures[2]).

Drawing Number	Number of specific otter crossings	Additional crossings
Figure 6.18	2	1
Figure 6.20		2
Figure 6.21		1
Figure 6.24	1	1
Figure 6.25	1	1
Figure 6.26	2	1
Figure 6.27		2
Figure 6.28	1	
Figure 6.29	2	1
Figure 6.30	3	2
Figure 6.31	4	
Figure 6.32		3

[2] Please note that all reference documents will be publicly available on www.a5wtc.com from mid-August

Figure 6.33	2	1
Figure 6.34	2	1
Figure 6.35	4	
Figure 6.36	3	
Figure 6.37	2	1
Figure 6.38	1	1
Figure 6.39	3	1
Drawing Number	Number of specific otter crossings	Additional crossings
Figure 6.40		1
Figure 6.41	1	
Figure 6.42	6	
Figure 6.43	3	1
Figure 6.44	1	

12. Furthermore, there are ten open span bridges along the route, which will either allow otter passage along the riverbank during a 1:5 year flood event, or which have a connectivity culvert adjacent which will allow passage.

13. In total, the current scheme therefore provides seventy-six otter passage locations in the Foyle and Blackwater catchments (see Appendix TNI_Core Documents_9782_61981_Env Mitigation Figures[3]).

14. NIEA have indicated that further provision for otter may be required, and thus additional investigation of passage provision will be undertaken prior to completion of the detailed design. In consultation with NIEA each culvert will either:
    a) Allow otter passage during a 1:5 year flood event;
    b) Be retrofitted with suitable ledges;
    c) Have a dry tunnel included adjacent; or
    d) Have fencing and planting provision to direct otter to a nearby alternative crossing location.

15. There is a paucity of information relating to the ability of otters to swim through culverts during high flow events, most information indicating that otter cannot swim when flow rates are high or the culvert is mostly full of water, with no metrics provided to enable ready assessment of a culverts ability to facilitate

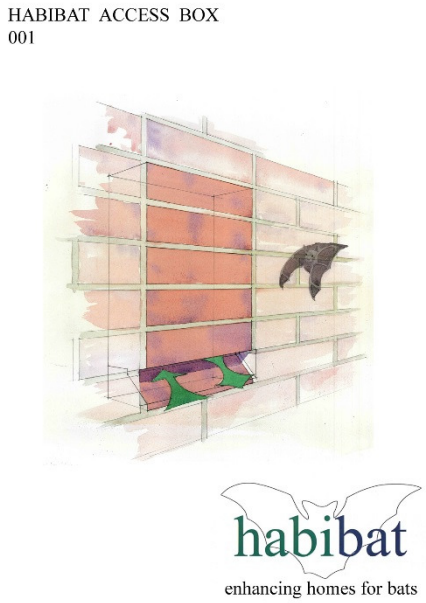
[3] Please note that all reference documents will be publicly available on www.a5wtc.com from mid-August

otter passage. Discussion with NIEA and suitable experts in otter ecology will be undertaken to inform the investigation.

Bats

Drumragh Crossing

16. Further to a request from NIEA, suitable bat bricks or similar will be included within the proposed bridge over the Drumragh river. This will provide roosting opportunities for *Myotis* species of bats. The artificial roosts will be either surface mounted or integrated within the bridge structure, and will be located so to ensure exposure to sunlight for at least part of the day.



Integrated bat roost example

Lighting

17. Artificial lighting can adversely affect bats, either by discouraging foraging in species that are light averse, or by attracting insects which may attract bats and thus bring them closer to moving vehicles, risking increased mortality. Either condition could have significant effects on bats adjacent to the road and within the wider countryside.

18. In acknowledgement of this, the Proposed Scheme has been designed with the minimum lighting necessary for safety purposes. Paragraph 11.6.159 of the ES (C_Appendix TNI_9782_61981_Bat Lighting) provides a commitment to the provision of lighting at junctions only.

19. The choice of lighting type can further reduce the likelihood of adverse effects on bats. Directional lighting can ensure that light spillage does not encroach on the surrounding countryside, and the bulb can be of a type that is less likely to attract flying insects. All lighting provided at junctions will have appropriately designed luminaire and additional shielding/cowling etc. as

necessary to ensure minimal light spillage into the surrounding habitat. Bulbs will be low or high pressure sodium type.

20. Mitigation for the Proposed Scheme has identified the need to include replacement roosting sites, some of which will be in close proximity to junctions. Further to discussion with NIEA it has been agreed that bat boxes which are to be installed close to junctions will be appropriately sited in discussion with NIEA.

Fragmentation of habitat

21. The risk of bats being injured or killed while crossing over the road has been discussed within the ES. Following discussions with NIEA in 2012 the use of the culverts/underbridges etc. beneath the Proposed Scheme was identified as appropriate mitigation in respect of this concern.

22. However, NIEA have raised a concern that pipistrelle species require larger culverts than many other species, and where such structures are not available, bays could either cross the road at vehicle height, or be blocked from accessing part of their foraging range.

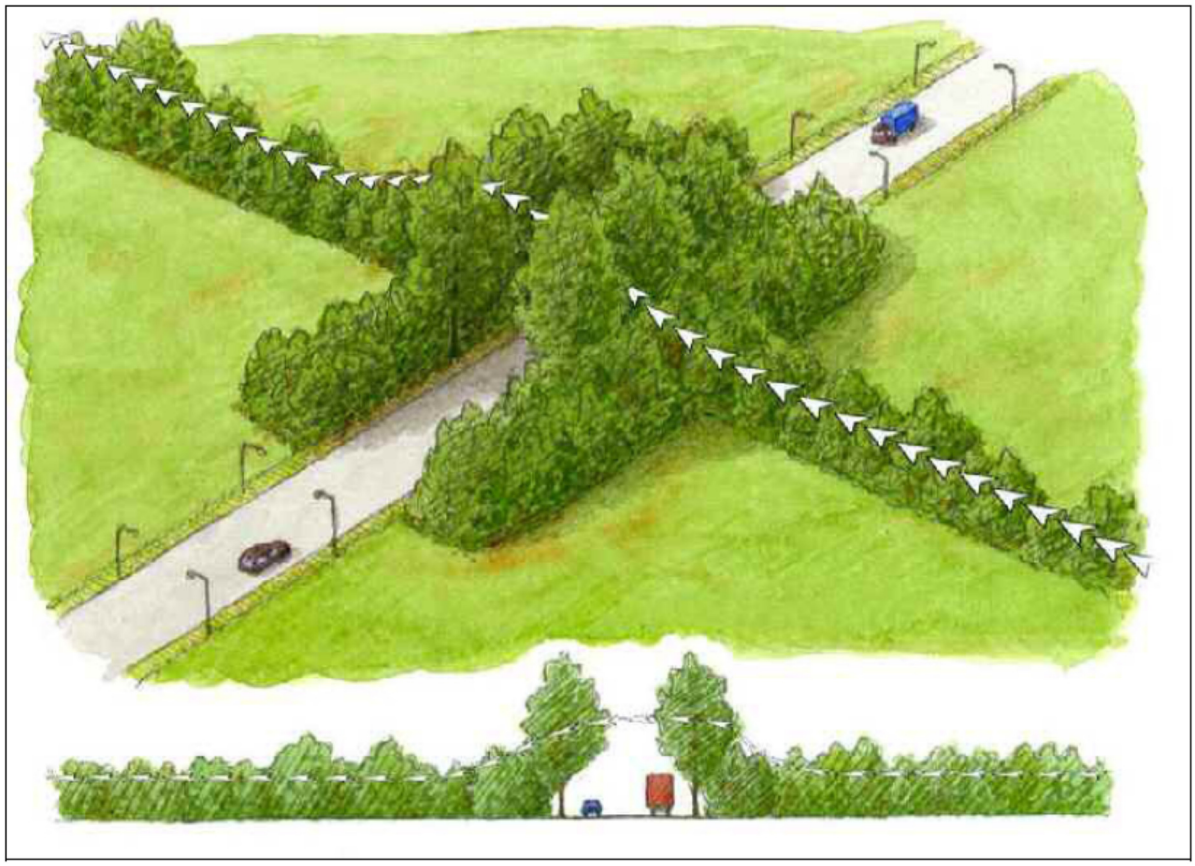
23. In response, further investigation of potential culvert crossings of the road has been undertaken in relation to pipistrelle bats. The figures provided in D_Appendix TNI_9782_61981_Pipistrelle Activity show the areas where pipistrelle bat activity was concentrated. The crossing points proposed in the specimen design have been plotted and examined in relation to pipistrelle crossing requirements.

24. Published research indicates that pipistrelle bats will use tunnel structures of 4m x 4m, however, anecdotal evidence from Mouchel bat surveyors has shown pipistrelle bats using structures approximately 3m tall or wide. Further, in the Proceedings of the 2015 International Conference on Ecology and Transportation, Wray *et al* cite an example where monitoring of 1.8 to 2.2m wide culverts showed ready use by pipistrelle bats[4]. Therefore a precautionary dimension of 3m either height or width has been selected as appropriate to this species. Where a proposed culvert has a dimension <3m, either height or width, and/or a cross sectional area of <9m^2, further mitigation has been proposed. A buffer of 200m has been established around each of these culverts, and where a suitable alternate culvert falls within this buffer, additional planting will be added at detailed design stage to direct bats to this culvert. All culverts will have planting to direct bats toward the culvert entrance.

25. Where no such alternate culvert falls within the 200m buffer, additional planting will be included to create a bat hop crossing. Bats would be encouraged to fly higher over roads by using tree planting on either side of

[4] http://www.icoet.net/ICOET_2005/proceedings/06IPCh9-369-379.pdf

the road according to the principles illustrated below. In order to enhance their utility from the outset a cluster of five standard (2-3m) high trees would be planted at each location. In order to sustain the height of the flyway, trees on the road side of the fence would have their lower branches (below the height of fence) regularly pruned back to the trunk, and all undergrowth would be kept cleared.



26. The table provided in D_Appendix TNI_9782_61981_Bat Crossing Table shows the culverts identified, their dimensions, and the outcome of the further assessment.

Loss of still air foraging habitat

26. The existence of still air corridors, provided by existing double hedgerows or tree lines can form an important component of the foraging landscape used by bats, allowing insects to congregate when wind conditions would otherwise preclude them from flying, and thus giving a wider spectrum of conditions in which bats can forage effectively.
27. All such features which are present within the Proposed Scheme and which have been identified as in use by bats, have been identified on Figures 1 to 7 of D_Appendix TNI_9782_61981_Double Hedge Features.

28. Many of these features occur along existing watercourses, which will be severed and/or realigned by the road. Where this occurs, suitable bankside

planting will be provided to reduce the ecological impact of the works, and the inclusion of shrub species in this planting will replace the lost features.

29. Other locations with double hedges or tree lines occur along road corridors, many of which are realigned for the Proposed Scheme, and some of which are stopped up. Suitable planting will be included in the detailed design to replace these features, either along the sides of the realigned road, or in an adjacent location to best facilitate continuity of flight lines.

White clawed crayfish

30. While no populations of white clawed crayfish have been recorded within the A45WTC Ecological Study Area, outside of the River Blackwater (see B1_Appendix TNI_9782_61981_WCC), the potential presence of small populations on watercourses within the Blackwater catchment has been acknowledged. Accordingly, ecological supervision of the destruction of any watercourse within the Blackwater catchment will be undertaken. The ecologist would translocate any white clawed crayfish found into adjacent areas of the watercourse which would not be subject to disturbance form works. Such works are subject to NIEA licensing, which may impose timing restrictions on works in such watercourses.

Smooth newt

31. Two ponds with confirmed smooth newt populations (P77 and P65), and one pond with a presumed population for assessment purposes (access was denied for survey of P45), will be destroyed during construction of the Proposed Scheme.

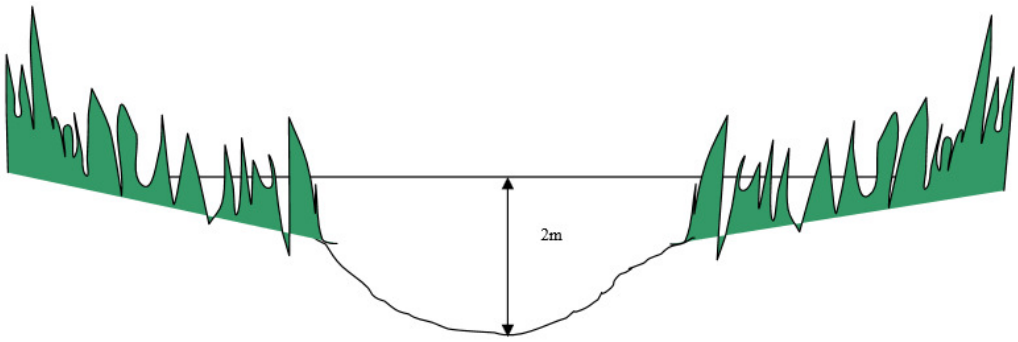
32. Current proposals include for replacement of ponds P77 and P65.

33. If pre-construction surveys identify smooth newt in P45, a replacement pond will be created to the south-west of the adjacent junction, in land which is not severed from surrounding habitat by roads or access tracks.

34. Replacement ponds will be created with a clay liner or similar permanent structure, to avoid concerns over liner punctures and possible need for repair. Ponds will be created following guidance provided by Ulster Wildlife Trust (see Appendix TNI_Core Documents_9782_61981_Pond[5]) and will include the following features:
    - The shoreline of the pond will be as irregular as possible to provide secluded, sheltered areas for wildlife;
    - The pond edge will be the same height the whole way round the pond;
    - No trees will be planted adjacent to the southern side of the pond; and

[5] Please note that all reference documents will be publicly available on www.a5wtc.com from mid-August

- Pond edges will be shallow slopes to provide wide margins of emergent vegetation, with deeper areas provided to maintain open water, as per the figure below, replicated from the UWT guidance.



35. The current proposal for replacement of P65 could leave smooth newts isolated from high quality foraging and shelter habitat. Therefore, it is proposed to relocate this pond to the west of the mainline carriageway (see D_Appendix TNI_9782_61981_Newt Pond 63600). The new pond will be created as a linear feature, approximately 100m long by 8m wide. This pond will be located to avoid nearby bog habitat.

Badger

36. TNI will provide additional information on all main setts to the NIEA Wildlife Officer during the detailed design stage.

B1_Appendix TNI_9782_61981_Otter Mitigation

Introduction

37. Two otter holts have been identified within the landtake of the proposed A5 WTC, with a further holt identified within close proximity of the works, in addition a number of couches or suspected couches have been identified within or in proximity to the landtake. Furthermore, a site with high potential for natal den presence has been recorded at Strabane Nature Reserve, this site could not be investigated fully due to density of vegetation, and thus a precautionary approach has been used in assessing potential impacts at this location.

38. This method statement has been created to avoid or reduce impacts of works at the specific locations where otter resting places are present and where suspected breeding is taking place. Further detail will be developed following pre-construction surveys and consultation with NIEA staff.

39. The confirmed otter holts within the landtake are at the Derg River (236185,387548) and along the Fairy Water (242717,374998). The confirmed holt close to the landtake is adjacent to Strabane Nature Reserve (233998,398502). The mitigation measures proposed are designed to safeguard otter during and following construction of the A5 WTC scheme, the measures intend to ensure that:
    - Individual otter are not killed or injured during construction.
    - No otter holt is damaged unnecessarily, and otters occupying holts are not harmed or disturbed.
    - Where a holt must be removed for the construction works, adequate measures are taken to protect otter, and to replace the lost holt.
    - Commuting and foraging otters within close vicinity of identified holts are not disturbed by construction works.

Pre-construction surveys

Holts and couches

40. For the holts and couches a pre-construction survey will be undertaken at least 6 weeks prior to construction commencing within 100m of the site. The site will then be monitored on a weekly basis throughout the works. If otter are deemed to be present during the pre-construction survey, a licence will be required and detailed discussions with NIEA will be undertaken to determine the most appropriate course of action, including closure methods, and provision of replacement holts. The otter monitoring survey will use camera trapping to assess otter activity at each holt location. Camera traps will be set up and will then be visited on a monthly basis to collect data and maintain the camera traps. During these visits, the holts and immediate

surrounding area will be surveyed for field signs of otter activity, such as otter spraints and footprints.

Strabane Nature Reserve potential natal site

41. For the potential natal site at Strabane Nature Reserve, a pre-construction monitoring survey for otter will be undertaken commencing in July/August 2016, more than 12 months prior to proposed construction work commencing. The otter monitoring survey will use camera trapping to assess otter activity at each holt location. Camera traps will be set up and will then be visited on a monthly basis to collect data and maintain the camera traps. During these visits, the holts and immediate surrounding area will be surveyed for field signs of otter activity, such as otter spraints and footprints.

42. The data collected during the otter monitoring survey will be used to create update reports which will be issued to Northern Ireland Environment Agency (NIEA) every three months. Update reports will continue to be issued to NIEA once construction is underway.

43. Camera traps can look suspicious to members of the public. To prevent terrorism concerns arising from the public finding the camera traps, the local police will be informed of the camera trap study prior to camera traps being set up.

Protection Measures – During Construction

Holts and couches

44. Prior to construction, a robust barrier will be erected to demarcate a 30m exclusion zone surround each otter holt or couch. This will exclude otters from the construction area and will protect otter holts and couches from damage by the works. This barrier can be in the form of a sturdy fence or an earth bund, but must be sufficient to restrict otters from entering the works area and restrict machinery from coming close to the otter holt or couch. This barrier will be maintained throughout the duration of the works.

45. Where a confirmed holt or couch cannot be avoided by the works a detailed method statement for closure of the resting place will be developed in consultation with NIEA, and a licence sought to permit the works. Mitigation measures in these cases will include provision of a replacement holt at the edge of the vesting line, or in a suitable location agreed with NIEA.

46. A toolbox talk will be provided to contractors prior to work commencing. The talk will be delivered by a suitably experience ecologist who will explain the legal protection afforded to otters, highlight sensitive areas within the construction area and discuss appropriate working methods to ensure otters are safeguarded.

47. An Ecological Clerk of Works will be appointed ahead of construction commencing. The Ecological Clerk of Works will undertake tasks including pre-construction site checks of areas close to otter holts and supervision of works. As a minimum requirement, the Ecological Clerk of Works will undertake weekly visits to the construction sites adjacent to otter holts and couches.

48. Works within 100m of otter holts and couches will be restricted to daylight hours to avoid the peak activity period for otter (which is after sunset and before sunrise). Artificial construction lighting will be avoided within this area. Trenches or excavations within 250m of the otter holt or couch will be covered at the end of every working day, or a ramp will be installed to ensure otters are not trapped within excavations. Removal of bankside vegetation within 30m of an otter holt or couch will be avoided unless unavoidable, in which case a licence will be sought from NIEA prior to such works commencing.

49. Construction works within close vicinity of rivers or drainage channels will be undertaken in accordance with best practice guidelines. This includes adherence to the methods and best practice described the Pollution Prevention Guidelines (PPG)[6] cooperatively developed by NIEA, the Environment Agency for England and Wales and the Scottish Environment Protection Agency (SEPA) for Scotland.

Strabane Nature Reserve potential natal site

50. If the site be confirmed as a natal site by pre-construction survey, no works will be undertaken within 150m of the woodland edge prior to NIEA granting a licence.

51. As otter cubs can remain within the natal site for up to 10 weeks, daily monitoring of the camera trap at the outfall of the small watercourse to the main river will be undertaken until cubs are recorded leaving the site and not returning.

52. At this point, sensitive clearance of the woodland vegetation which falls within the works area will be undertaken, minimising removal as far as possible. These works will be overseen by an Ecological Clerk of Works, following a careful search of the site, using non-powered hand tools to remove minimal vegetation to facilitate access to the site.

53. Once the vegetation has been removed a 1.8m high (minimum) close board fence will be erected along the edge of the remaining woodland.

[6]http://www.netregs.org.uk/library_of_topics/pollution_prevention_guides.aspx

Protection Measures – Post Construction

Holts and couches

54. When construction is complete the otter fence/earth bund should be carefully removed. The 50m area of bankside directly surrounding each otter holt or couch, including areas that may have been disturbed during the works, will be re-planted with appropriate vegetation. Hawthorn will be planted in the area immediately surrounding each holt/couch/replacement holt. This will provide additional protection for and help to prevent future disturbance.

55. A post-construction otter monitoring survey will be undertaken for 18 months following construction completion to assess if the works have affected otter activity. The monitoring survey will follow the same methods used in the pre-construction monitoring surveys and data collected will be used within update reports which will continue to be issued to NIEA every three months. A final report will be issued to NIEA following completion of the monitoring survey.

56. Otter-proof fencing is to be installed along the boundary of the newly constructed A5 WTC to reduce the risk of road casualties from otters that are not accustomed to the new road. A 150m stretch of fencing will be installed at the edge of the TNI landownership, or in a location to be agreed with NIEA, on both sides of the road. Such fencing will tie in to an agreed otter crossing point.

57. Where the A5 WTC does not intersect the watercourse in the locations of the holts/couches, the fencing will be placed to rebound otters away from the road and prevent them from crossing it, and not act to direct them towards a specific crossing point.

58. 50mm wire mesh badger fencing will be used, as described in the DMRB (Volume 10, Section 1, Part 5, Chapter 9, see Appendix_TNI_Core Documents_9782_61981_HA8199)[7]. This type of fencing will be robust enough to prevent the fence from being undermined by badgers and rabbits. The addition of a 300mm mesh overhang at the top, as described within DMRB is not seen as essential by Dr Paul Chanin.

Strabane Nature Reserve potential natal site

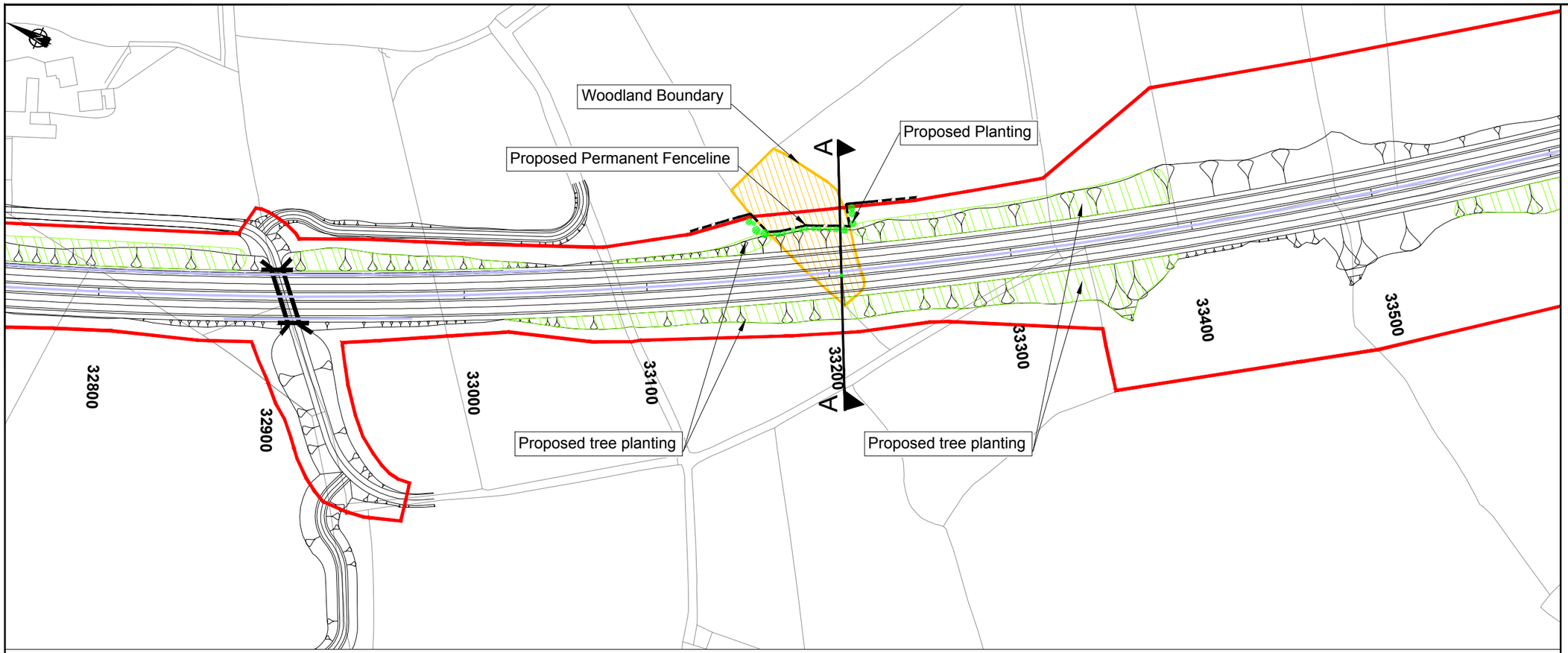
59. Should evidence of otter breeding activity be confirmed by the pre-construction survey works, the close board fencing will be retained at this location, and maintained in perpetuity.

60. Landscape planting adjacent to the nature reserve will replace lost habitat over time, and serve to bolster the site's appeal to breeding otter. Additional

[7] Please note that all reference documents will be publicly available on www.a5wtc.com from mid-August

planting will be included around the adjacent SUDs pond to connect to the remaining portion of the Nature Reserve.

61. Landscape maintenance plans for this section of the landscape scheme will include notes on otter presence and measures maintenance contractors must take to prevent disturbance to otter at this location.



PLAN
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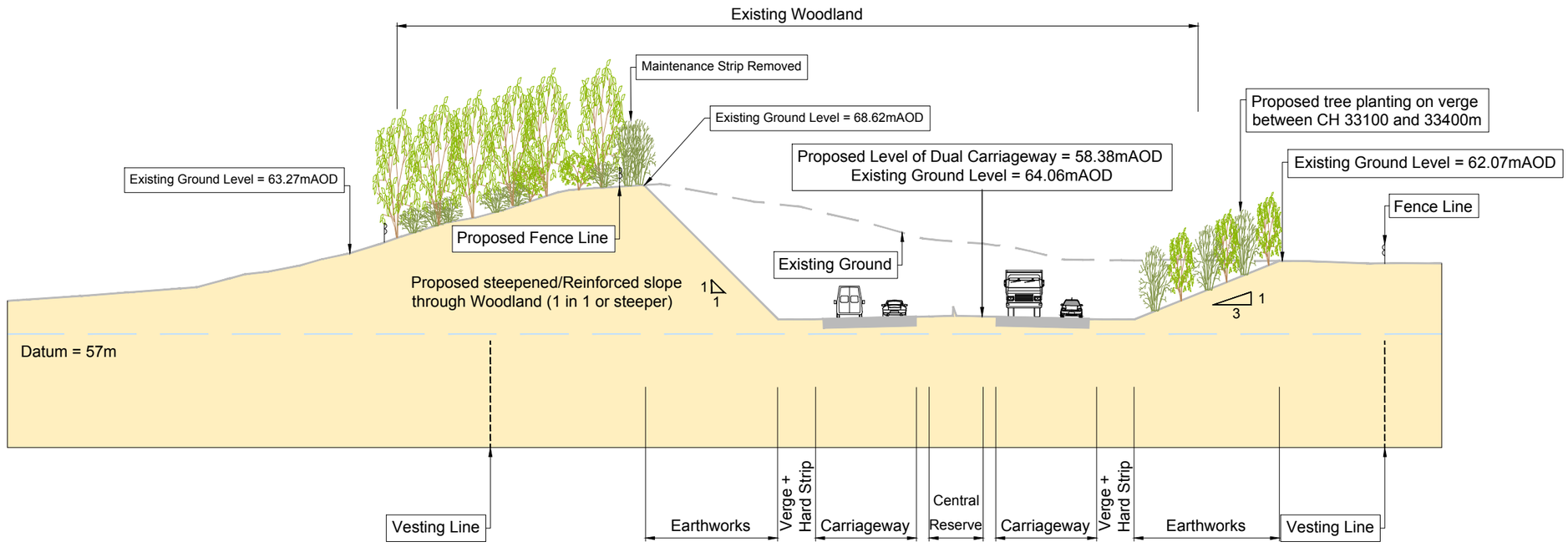

CROSS SECTION A-A
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LEGEND

- 2016 NOTICE OF INTENTION TO MAKE VESTING ORDER (NIMVO)
- A5WTC ALIGNMENT
- ROAD RESTRAINT SYSTEMS
- ENVIRONMENTAL MITIGATION

NOTE:

1. REINFORCED SLOPE THROUGH WOODLAND.
2. STEEPENING THE SLOPE BEYOND 1 IN 1 MAY REQUIRE SOIL NAILING OR OTHER INTRUSIVE MEASURES TO FORM A STABLE SLOPE.
3. DRAFT VESTING LINE TO REMAIN AS SHOWN TO ACCOMMODATE FINAL DESIGN SOLUTION.
4. AREA OF EXISTING WOODLAND = 0.75 Acres
5. AREA OF WOODLAND REMOVED BY CURRENT PROPOSAL = 0.41 Acres
6. AREA OF WOODLAND REMOVED BY NEW PROPOSAL = 0.31 Acres

Client: transportni

Project: A5 WTC Western Transport Corridor

Drawing Title: SECTION 2 - SPECIMEN DESIGN
MULVIN PARK RE-DESIGN: REDUCED WOODLAND LOSS, OPENING YEAR

mouchel
building great relationships
Office: Shorefield House
30 Kinnegar Drive
Holywood
County Down
BT18 9JQ

Scales (at A3 size): AS SHOWN

Purpose of Issue: SKETCH

Drawing No: D_Appendix TNI_9782_61981_Mulvin Park Wood

Version: A