Appendix D5

Bat Survey Report

A77 Maybole Bypass

Bat Survey Report

Document reference: co25000182-ENV-BSR-001

Revision: Rev 001

Issued: July 2013

Service is our passion. People, our strength

Document Control Sheet

Project Name:	A77 Maybole Bypass
Project Number:	Co25000182
Document / Report Title:	Bat Survey Report
Document / Report Number:	Co25000182-ENV-BSR-001

Issue Status/Amendment	Prepared	Reviewed	Approved
Issue 001	Name: Melanie Roxburgh Signature: Date: July 2013	Name: Gavin Sams Signature:  Date: July 2013	Name: Orla Fitzpatrick Signature:  Date: July 2013
(Enter Details of Amendment)	Name: (print) Signature: Date:	Name: (print) Signature: Date:	Name: (print) Signature: Date:
(Enter Details of Amendment)	Name: (print) Signature: Date:	Name: (print) Signature: Date:	Name: (print) Signature: Date:
(Enter Details of Amendment)	Name: (print) Signature: Date:	Name: (print) Signature: Date:	Name: (print) Signature: Date:

1. Introduction

1.1.1. Maybole is one of the five main Ayrshire towns which lie on the A77 Trunk Road. It is approximately 6km east of the coast and 11km south of Ayr. Residential areas of Maybole are located to the south of the western half of the study area. The landscape of the study area is dominated by open agricultural grassland with only minor areas of woodland present.

1.1.2. In general there are broadleaved plantation woodland, coniferous woodland, improved grassland, marshy grassland, species-poor defunct hedgerows, scattered trees, amenity grassland and introduced shrub areas within the study area.

1.1.3. The proposed scheme is located between National Grid Reference (NGR) NS 28848 09551 (south of Maybole) and NS 32137 12957(north of Maybole). Drawing No. 25000182/LND/024 shows the location of the scheme and Drawing No. 25000182/PP/041 shows the proposed scheme.

1.1.4. A Phase 1 habitat survey was undertaken between 23rd July and 20th September 2012 which identified numerous trees and areas with good bat roost potential (BRP).

1.1.5. Bat surveys were therefore undertaken on 14th, 29th and 30th May and 17th, 18th and 19th June 2013.

1.1.6. Although the Phase 1 habitat survey report identified numerous areas with BRP, many of these were out with the proposed scheme and therefore would not be impacted on. As a result, only trees with BRP along the proposed scheme were surveyed.

2. Conservation Status

2.1.1. All species of bat that occur in the UK have suffered population declines over the past 100 years. As a result, all bats and their roosts are protected by law under the Wildlife and Countryside Act 1981 (as amended) and the Nature Conservation (Scotland) Act 2004. As bats are designated as European Protected Species (EPS), further protection is afforded to all bat species in the UK under the Conservation (Natural Habitats, &c) Regulations 1994 (as amended) and The Conservation (Natural Habitats, &c) Amendment (Scotland) Regulations 2004.

2.1.2. It is an offence to deliberately or recklessly:

- Capture, injure or kill a bat
- Harass a bat or group of bats
- To disturb a bat in a roost (any structure or place it uses for shelter or protection)
- To disturb a bat while it is rearing or otherwise caring for its young (this would be a maternity roost)
- To obstruct access to a bat roost or to otherwise deny the animal use of the roost
- To disturb such a bat in a manner that is, or in circumstances which are, likely to significantly affect the local distribution or abundance of that species
- To disturb a bat in a manner that is, or in circumstances which are, likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young
- Damage or destroy a breeding site or resting place of such an animal (note: this does not need to be deliberate or reckless to constitute an offence)
- Keep, transport, sell or exchange or offer for sale or exchange any bat or any part or derivative of one (if obtained after 10th June 1994).

3. Methodology

3.1. Desk Study

3.1.1. A search was carried out on the National Biodiversity Network (NBN) Gateway website[1] to establish the types of bat species likely to occur in the area. The Ayrshire Biodiversity Action Plan (BAP) 2007-2010 was also consulted for bat species action plans for the area.

3.2. Field Study

3.2.1. The surveys were carried out on various dates, as both dusk and dawn surveys. These were undertaken between 14th May 2013 and 19th June 2013. The surveys were undertaken by Amey ecologist Melanie Roxburgh, Amey Landscape Officer Tracy Smith and Assistant Environmentalist Heather Ather.

3.2.2. The dates, weather conditions and times of sunset/sunrise can be found in Table 1 – Weather Conditions.

3.2.3. The methodology used for the survey and report is set out in the Bat Conservation Trust (2007) Bat Surveys: Good Practice Guidelines[2] and the Bat Workers Manual, 3rd Edition, 2004[3].

3.2.4. The evening surveys commenced approximately 30 minutes prior to sunset and continued until approximately 1 hour 45 minutes after. The dawn survey commenced approximately 1 hour 30 minutes before sunrise and continued until it was considered that it was too light for bats.

3.2.5. Visual observations of bats were supported with the use of ultra-sonic bat detectors. Batbox Duets were used, which are a combination of heterodyne and frequency division detectors.

3.2.6. Surveyors stood at various positions along the affected route, where trees which were identified as suitable for bat roosts were located.

3.2.7. Survey locations can be seen in Drawing No. 25000182/BSR/001 and their national grid references as follows:

- Survey point 1: NS 29394 10538
- Survey point 2: NS 30472 10853
- Survey point 3: NS 31209 11293

[1] National Biodiversity Network (2010), Species groups recorded in the 10km grid squares NS20, NS21, NS30 and NS31, available from: http://data.nbn.org.uk/gridSquares/tenKmSelector.jsp?map.x=128&map.y=174

[2] Bat Conservation Trust 2007, Bat Surveys: Good Practice Guidelines. Bat Conservation Trust, London.

[3] Mitchell-Jones, A.J. and McLeish, A.P., 2004. The Bat Workers Manual; Third Edition. Joint Nature Conservation Committee: Peterborough.

Table 1: Weather Conditions						
Date	**Survey point**	**Sunrise**	**Sunset**	**Cloud Cover**	**Rain**	**Wind**
14/05/13	1	-	2120	0-33%	None	Slight breeze
29/05/13	2	-	2141	66-99%	None	Slight breeze
30/05/13	3	-	2142	33-66%	None	Slight breeze
17/06/13	2	-	2203	33-66%	None	None
18/06/13	2 & 3	0436	2203	33-66%	None	None
19/06/13	3	0436	2204	0-33%	None	None

4. Results

4.1. Desk Study

4.1.1. The search on the NBN Gateway website highlighted the presence of common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, daubenton's *Myotis daubentonii*, lesser noctule *Nyctalus leisleri*, Nathusius's pipistrelle *Pipistreullus nathusii* in the 10km grid squares NS20, NS21, NS30 and NS32.

4.1.2. The Ayrshire BAP has species action plans in place for the common and soprano pipistrelle.

4.2. Field Study

4.2.1. Each dusk and dawn survey had varying results with different levels of activity and species.

4.2.2. The survey undertaken 14th May 2013 was undertaken of the trees on Gardenrose Path, a summary of the results of this survey is shown in Table 2, and shows that the first bat was seen approximately 20 minutes after sunset. This was heard at a frequency most related to common pipistrelles, which emerge shortly after sunset, and as this was heard only 20 minutes after sunset, it is thought to be roosting close to the survey area.

4.2.3. Approximately 10 minutes after the first bat was seen, there were 6 bats counted. Over the next 10 minutes, the activity levels dropped again to only 1 bat, eventually tailing off to none approximately 35 minutes after the first bat was seen.

4.2.4. The surveys undertaken on 29th May, 17th and 18th June 2013 were undertaken in the vicinity of Lover's Lane, opposite the large oak *Quercus*, a summary of the results of these surveys are shown in Tables 3, 5 and 6.

4.2.5. During the survey of the 29th May, two bats were seen approximately 15 minutes after sunset, flying from trees on the lane to the north over the road and fields. These were some distance away from the surveyors' location and therefore were not recorded on the bat detector.

4.2.6. At approximately 20 minutes after sunset, soprano pipistrelle bats were seen and heard flying within the vicinity of the large oak. This was intermittent activity for approximately 30 minutes. The rain commenced shortly afterwards and the bat activity reduced. The occasional, solitary bat were heard until approximately 15 minutes before the survey was terminated.

4.2.7. During the survey of the 17th June, the first bat was heard approximately 30 minutes after sunset. This bat, presumed to be a natterer's due to the frequency it was heard at, was seen flying in the vicinity of the large oak and only heard very faintly. This bat was then heard continuously for approximately 20 minutes. Several other bats, soprano pipistrelles were seen in the distance and flying around the large oak until 20 minutes prior to the end of the survey.

4.2.8. During the dawn survey of 18th June, a bat was heard approximately 35 minutes after the survey commenced. Two further pipistrelles were recorded approximately 10 minutes after this. No further bat activity was recorded.

4.2.9. The surveys undertaken on 30th May, 18th and 19th June 2013 were undertaken in the area behind Nether Culzean Farm and the railway line, at the few trees here. A summary of the results of these surveys are shown in Tables 4, 7 and 8.

4.2.10. During the survey of the 30th May, the first bat was heard almost one hour after sunset. This was a soprano pipistrelle, heard for approximately 30 minutes. No further activity was recorded during this survey.

4.2.11. During the dusk survey of 18th June, the first bat was seen approximately 40 minutes after sunset, flying in circles for 10 minutes. This was a soprano pipistrelle. A natterer's was briefly heard at this time. No further bats were recorded during the survey.

4.2.12. During the dawn survey of 19th June, two bats were seen and heard approximately 30 minutes after sunset. These were active for several minutes, flying back and forth along the hedgerow. One further bat, a soprano pipistrelle was heard approximately 15 minutes after this. No further bats were recorded.

Table 2: Results from dusk survey 14/05/13

Time	Frequency	Notes
2050	-	Survey commenced
2120	-	Sunset
2146	46kHz	Bat seen and heard, flying along hedgerow
2153	46kHz	Bat seen and heard by the tree, flew in circles overhead then along the tree line to the north west.
2155	50kHz	6 bats seen and heard by the trees at the houses.
2157	-	2 bats seen flying about trees – feeding noises.
2204	-	Reduced activity
2208	-	Only one bat
2221	-	Limited to no activity
2241	-	Survey terminated

Table 3: Results from dusk survey 29/05/13		
Time	**Frequency**	**Notes**
2110	-	Survey commenced
2141	-	Sunset
2156	-	2 bats seen flying from trees on lane and north over fields.
2158	-	2 bats seen flying from trees on lane and north over fields.
2200	55kHz	Bat heard.
2202	-	Bat seen in area of tree with T.P.O.
2204	-	Bat seen flying by T.P.O
2210	55kHz	Bat seen flying in and about T.P.O.
2212	55kHz	Bat heard.
2216	45 & 55kHz	2 bats heard.
2223	55kHz	Bat heard.
2230	55kHz	Bat heard.
2237	-	Rain starting.
2242	55kHz	Bat seen and heard along hedgerow.
2250	-	Limited activity
2255	55kHz	Bat heard.
2301	55kHz	2 bats heard.
2306	55kHz	Bat heard for several minutes.
2313	55kHz	Bat heard.
2317	55kHz	Bat heard.
2330	-	Survey terminated

Table 4: Results from dusk survey 30/05/13		
Time	**Frequency**	**Notes**
2110	-	Survey commenced
2142	-	Sunset
2237	55kHz	Bat heard.
2245	55kHz	Bat heard and seen flying through field.
2300	55kHz	Bat heard.
2308	55kHz	Bat heard.
2328	-	Survey terminated

Table 5: Results from dusk survey 17/06/13		
Time	**Frequency**	**Notes**
2125	-	Survey commenced
2157	22kHz	1 bat seen flying in vicinity of T.P.O tree. Heard very faintly.
2203	-	Sunset Bat continuously flying for approximately 20 minutes.
2224	-	Bat in distance behind tree.
2232	-	Bat in distance behind tree.
2239	-	Bat seen flying in about tree.
2246	52kHz	Bat heard.
2253	52kHz	Bat heard for several minutes.
2259	55kHz	Bat seen and heard flying from behind field towards tree.
2320	-	Survey terminated

Table 6: Results from dawn survey 18/06/13		
Time	**Frequency**	**Notes**
0255	-	Survey commenced
0330	45kHz	Bat heard faintly for couple of minutes
0340	45kHz	2 bats seen and heard flying around tree
0346	-	Lots of bird activity
0436	-	Sunrise – survey terminated

Table 7: Results from dusk survey 18/06/13		
Time	**Frequency**	**Notes**
2130	-	Survey commenced
2203	-	Sunset
2243	-	Bat seen on west side of hedgerow, flying in circles for approximately 10 minutes.
2353	55 & 22kHz	Bat flew west to east through field. Second bat heard.
2307	-	Survey terminated

Table 8: Results from dawn survey 19/06/13		
Time	**Frequency**	**Notes**
0253	-	Survey commenced
0318	55kHz	2 bats seen flying west to east. Bats seen around the tree and hedges, flying back and forth for several minutes.
0332	55kHz	Bat seen flying back and forth along hedgerow.
0344	55kHz	Bat heard.
0430	-	Survey terminated

Table 9: Results from dusk survey 19/06/13		
Time	**Frequency**	**Notes**
2122	-	Survey commenced
2204	-	Sunset
2222	55kHz	Bat seen flying north to south along hedgerow
2225	55kHz	Bat seen flying north to south along hedgerow
2238	55kHz	2 bats seen flying south to north. Limited cloud cover – feeling very cold.
2257	55kHz	Bat seen flying north to south.
2304	55kHz	Bat seen flying south to north.
2305	55kHz	Bat seen flying north to south.
2321	55kHz.	Bat flew south to north then back.
2322	22kHz	Bat heard loud.
2330	-	Survey terminated

5. Interpretation of Results

5.1.1. Bats are active in many locations, through which the proposed scheme will pass.

5.1.2. A small amount of bat activity was recorded along the tree line at Gardenrose Path. Several bats were heard for a limited amount of time and none were observed emerging from the trees. They were first recorded shortly after sunset, and it is therefore assumed their roost is close by, most likely within the loft space of one of the nearby properties.

5.1.3. No roosts were present within the trees on Gardenrose Path, between national grid references (NGR) NS 29401 10540 and NS 29501, 10469.

5.1.4. A limited amount of activity was recorded in the area to the north of the railway line at Nether Culzean. It is thought that this is due to the presence of woodland immediately to the south of the railway line, which would be a favoured habitat and place for bat roosting potential.

5.1.5. No roosts are present within the trees to the north of the railway line at Nether Culzean, between NGR NS 31041, 11138 and NS 31481, 11589.

5.1.6. A large amount of bat activity was recorded in the area of Lover's Lane, with most focus on the large oak tree, NGR NS 30451, 10868, due to the need for the removal of this tree. In this area, bats utilise the hedgerows for flight paths and often use the large oak to feed. Many of the bats were heard and seen very soon after sunset and it is therefore assumed they are utilising the trees between Alloway Road and Lovers Lane to roost. None of the affected trees in this area were found to have bat roosts present.

6. Conclusions and Recommendations

6.1.1. A number of bat emergence and activity surveys (dusk and dawn) were carried out at various locations along the proposed scheme where trees which were identified as having bat roost potential may need to be removed.

6.1.2. During the surveys, some areas were found to have a higher bat activity than others, often due to the surrounding habitats. Where a preferred habitat was found close to the survey area, the survey results found a reduced bat activity.

6.1.3. The main bat species recorded throughout the surveys was soprano pipistrelle.

6.1.4. The proposed scheme will bisect flight paths utilised by the bats in each of the surveyed areas. Where possible, compensatory planting should be undertaken and the level of the road proposed should be similar to that of the existing land to allow bats to pass over without falling victim to road traffic accidents.

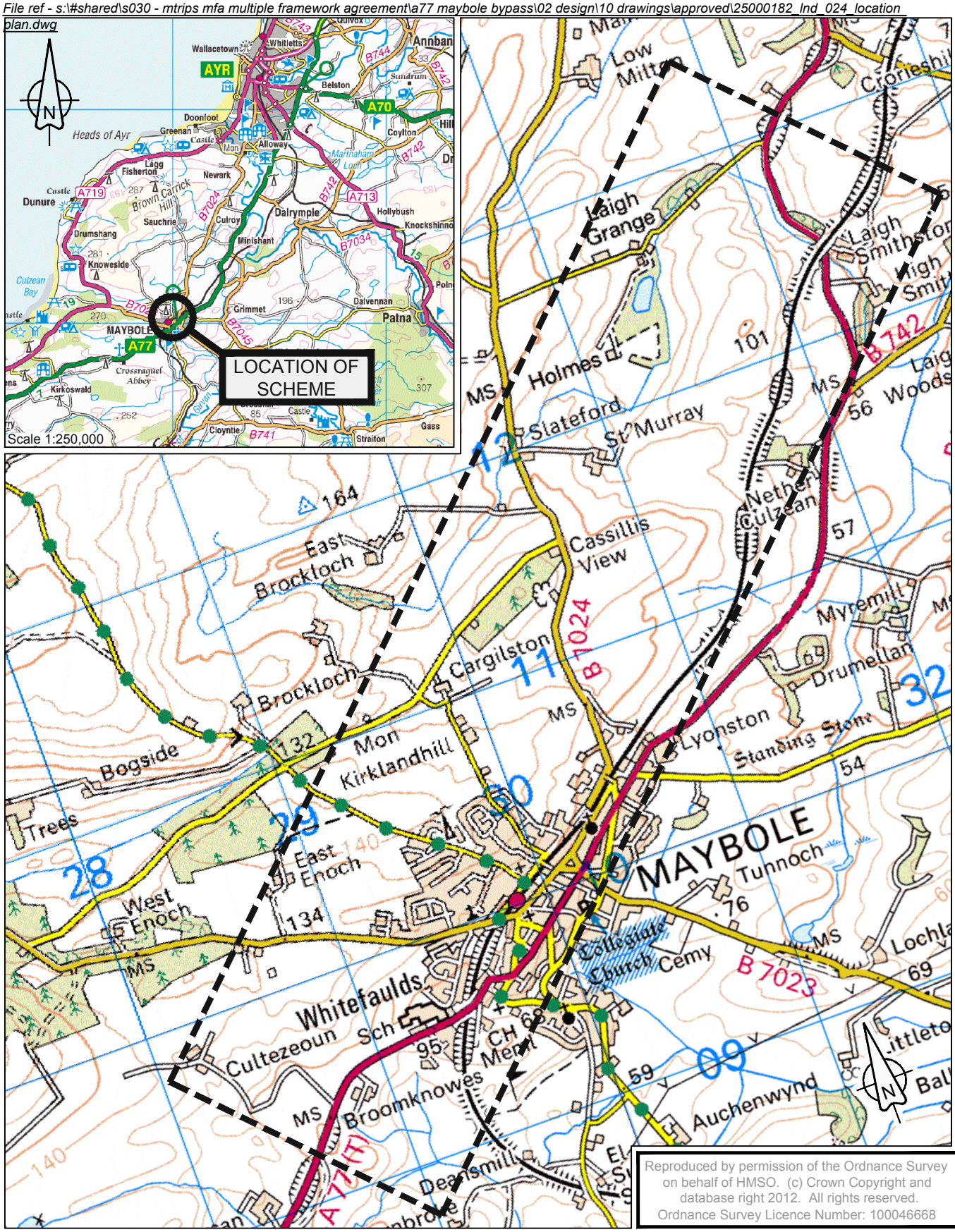
6.1.5. No bat roosts were found to be present within the affected trees surveyed.

6.1.6. It is however, recommended that surveys are carried out prior to construction as new bat roosts may be established prior to the start of the works.

6.1.7. Post construction surveys should also be undertaken and any habitat severance should be mitigated.

0 100

File ref - s:\#shared\s030 - mtrips mfa multiple framework agreement\a77 maybole bypass\02 design\10 drawings\approved\25000182_lnd_024_location plan.dwg



KEY

Scheme Extents

Rev	Revision details	Chkd	Appd	Date

Drawn: GK	
Design: GK	
Chkd: MT	
Appd: GMD	
Date: 24/08/2012	

Preliminary	
For comment	✓
For tender	
For construction	
As constructed	
Other	

Project Name

A77 Maybole Bypass

Drawing Title

Location Plan

Original Drg Size : A4	Dimensions : -
Scale : 1:25000m	Copyright © Amey

Client

Drawing No

25000182/LND/024

Rev

-

File ref - s:\#shared\s030 - mtrips mfa multiple framework agreement\a77 maybole bypass\02 design\05 roads\100 alignment\mx\input files\amey designs\options\design check\preferred v1\preferred v1.dwg

Key

Preferred Alignment

Rev	Revision details	Chkd	Appd	Date

Drawn: IH		Preliminary	
Design: DC		For comment	✓
Chkd: GMacD		For tender	
Appd: GMacD		For construction	
Date: 08.05.2013		As constructed	
		Other	

amey

www.amey.co.uk

Client

TRANSPORT SCOTLAND

Project Name

A77 Maybole Bypass

Drawing Title

Preferred Alignment

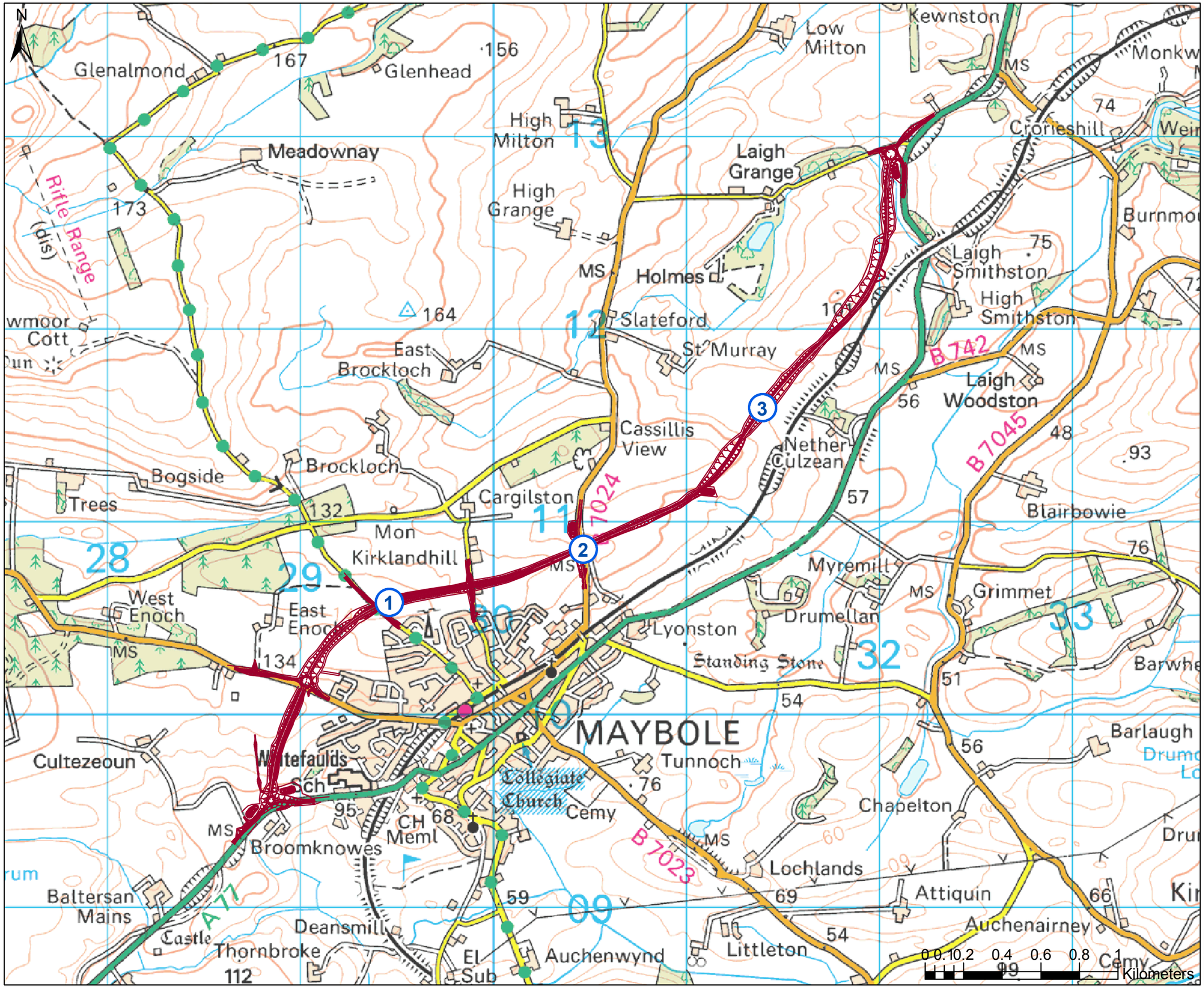
Original Drawing Size : A1	Dimensions : m
Scale : 1:10,000	Copyright © Amey

Drawing No

25000182/PP/041

Rev

P0



LEGEND

Maybole Bypass

Bat Survey Locations:

1. Gardenrose Path
2. Lover's Lane
3. Nether Culzean

Rev	Revision Details	Chkd	Appd	Date

Drawn : VM	Preliminary
Design : MR	For Comment
Chkd : MW	For tender
Appd : GH	For construction
Date : 18/07/2013	As constructed
	Other

amey

Client : TRANSPORT SCOTLAND

Project Name :

A77 Maybole Bypass

Drawing Title :

Bat Survey Locations

Original Drawing Size :	A3
Scale : 1:18,000	Dimensions :

Drawing No	Rev
25000182/BSR/001	R0