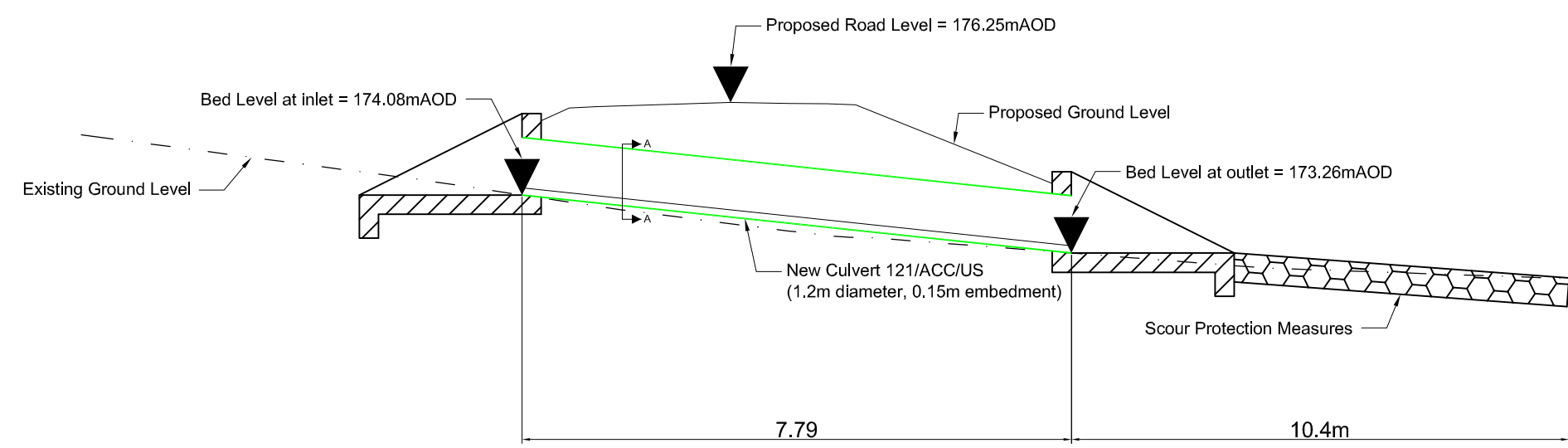
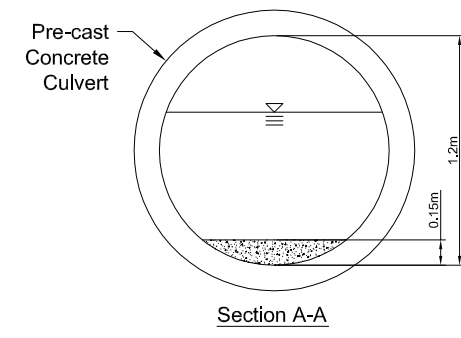


- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
  4. This drawing shall be read in conjunction with the 'Watercourse Crossing report' only and not in isolation.
  5. All 'new' and 'extended' culverts have been designed in accordance with the relevant provisions of DMRB.
  6. Where required 'scour protection measures' shall be provided within the zone indicated on the drawing. The nature and the extent of the scour protection measure will be further developed at detailed design stage in accordance with the relevant provisions of DMRB, taking into account flow hydraulics, channel geometry and channel morphology.
  7. Where shown culverts shall be 'embedded' with natural river deposits to the depth shown.
  8. Where shown 'cascades' are required to safely convey the design flood event (0.5% AEP (200-year) plus allowance for climate change). The cascade geometry shown on the drawing is indicative only and will be subject to further development at detailed design stage. The nature of the cascade will take one of the following forms,
    - Bedrock channel cascade.
    - Natural cascade with natural gravels, cobbles and rock forming individual steps.
    - Concrete cascade with stone pitching.
 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

**SCHEMATIC PLAN**



**WATERCOURSE 121/ACC/US LONGSECTION**

Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Apprv'd
0	17/01/17	FOR INFORMATION				



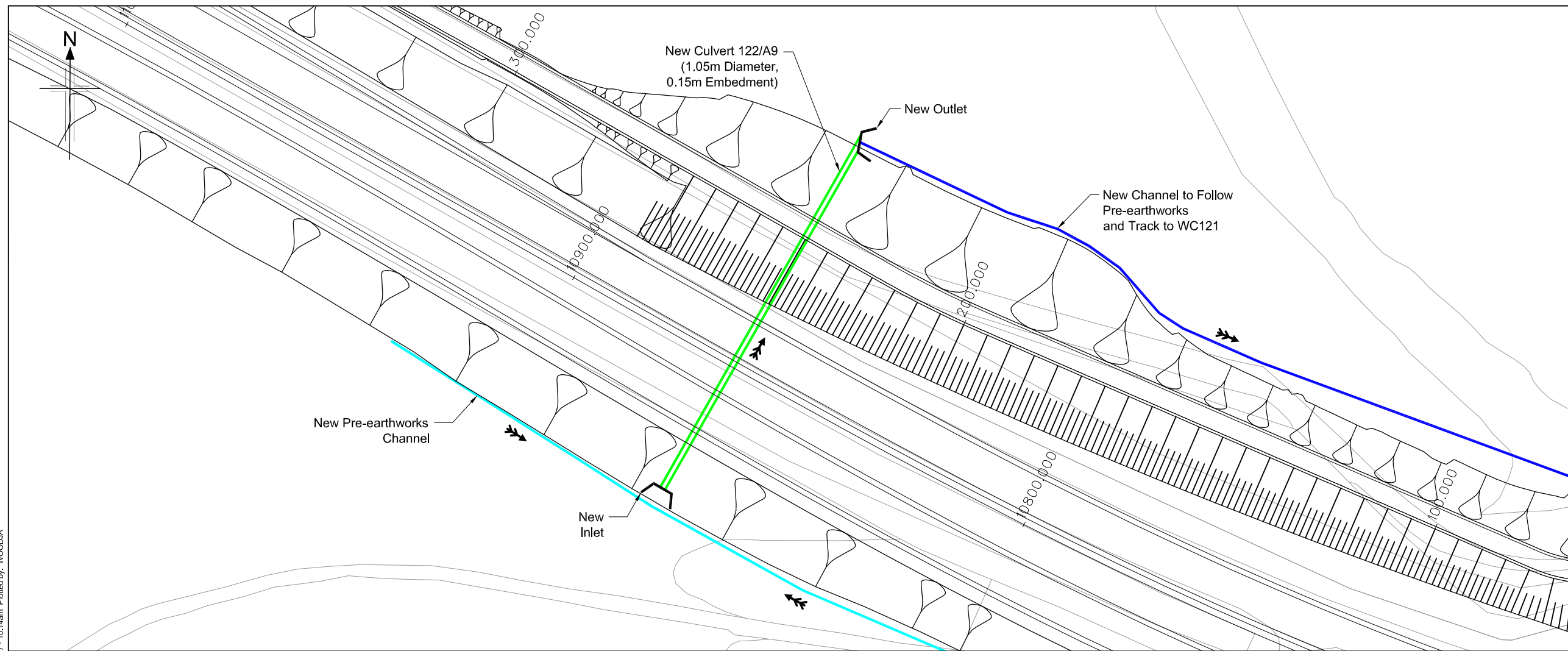
Drawing title  
**KILLIECRANKIE TO GLEN GARRY  
 PROPOSED NEW SIDE  
 ROAD CULVERT ON  
 WATERCOURSE WF121**

Drawing status: **FOR INFORMATION**

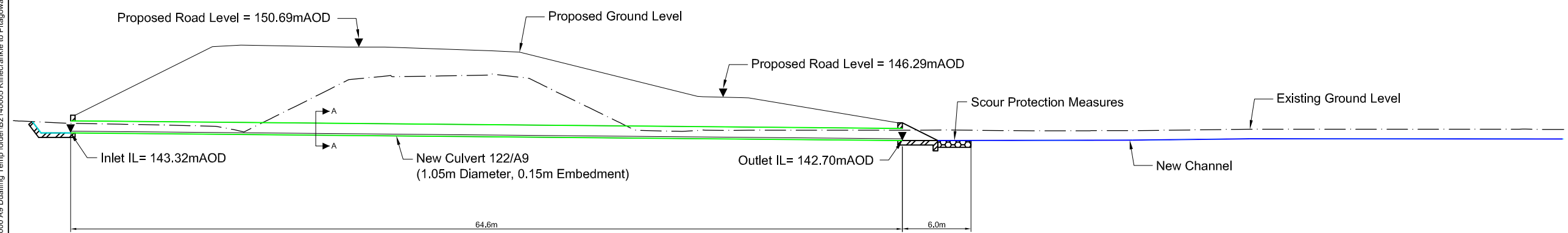
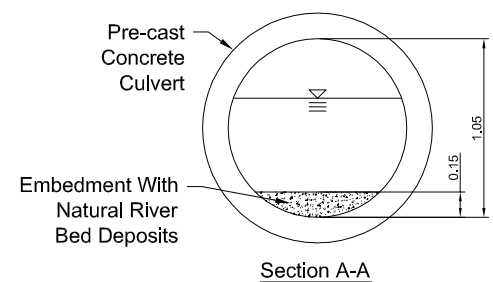
Scale	NTS @ A1	DO NOT SCALE
Jacobs No.	B2140005	

Drawing number: **Figure A.11.8.32** Rev: **0**

File: I:\Glarif\07\PV01\ECBC\BWA\_Jobs\B2140005 A9 Dualing Temp folder\B2140005 A9 Dualing CAD\Watercourse Modifications\WF121\ACCUS.dwg Date: Jul 31, 2017 - 2:03pm Plotted by: WOODJA  
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SCHEMATIC PLAN



WATERCOURSE 122 LONGSECTION

- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
  4. This drawing shall be read in conjunction with the 'Watercourse Crossing report' only and not in isolation.
  5. All 'new' and 'extended' culverts have been designed in accordance with the relevant provisions of DMRB.
  6. Where required 'scour protection measures' shall be provided within the zone indicated on the drawing. The nature and the extent of the scour protection measure will be further developed at detailed design stage in accordance with the relevant provisions of DMRB, taking into account flow hydraulics, channel geometry and channel morphology.
  7. Where shown culverts shall be 'embedded' with natural river deposits to the depth shown.
  8. Where shown 'cascades' are required to safely convey the design flood event (0.5% AEP (200-year) plus allowance for climate change). The cascade geometry shown on the drawing is indicative only and will be subject to further development at detailed design stage. The nature of the cascade will take one of the following forms,
    - Bedrock channel cascade.
    - Natural cascade with natural gravels, cobbles and rock forming individual steps.
    - Concrete cascade with stone pitching.
 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Appr'd
0	18/01/17	FOR INFORMATION				



Drawing title  
**KILLIECRANKIE TO GLEN GARRY  
 PROPOSED MODIFICATIONS  
 TO CULVERT ON  
 WATERCOURSE WF122**

Drawing status  
**FOR INFORMATION**

Scale  
 NTS @ A1      DO NOT SCALE

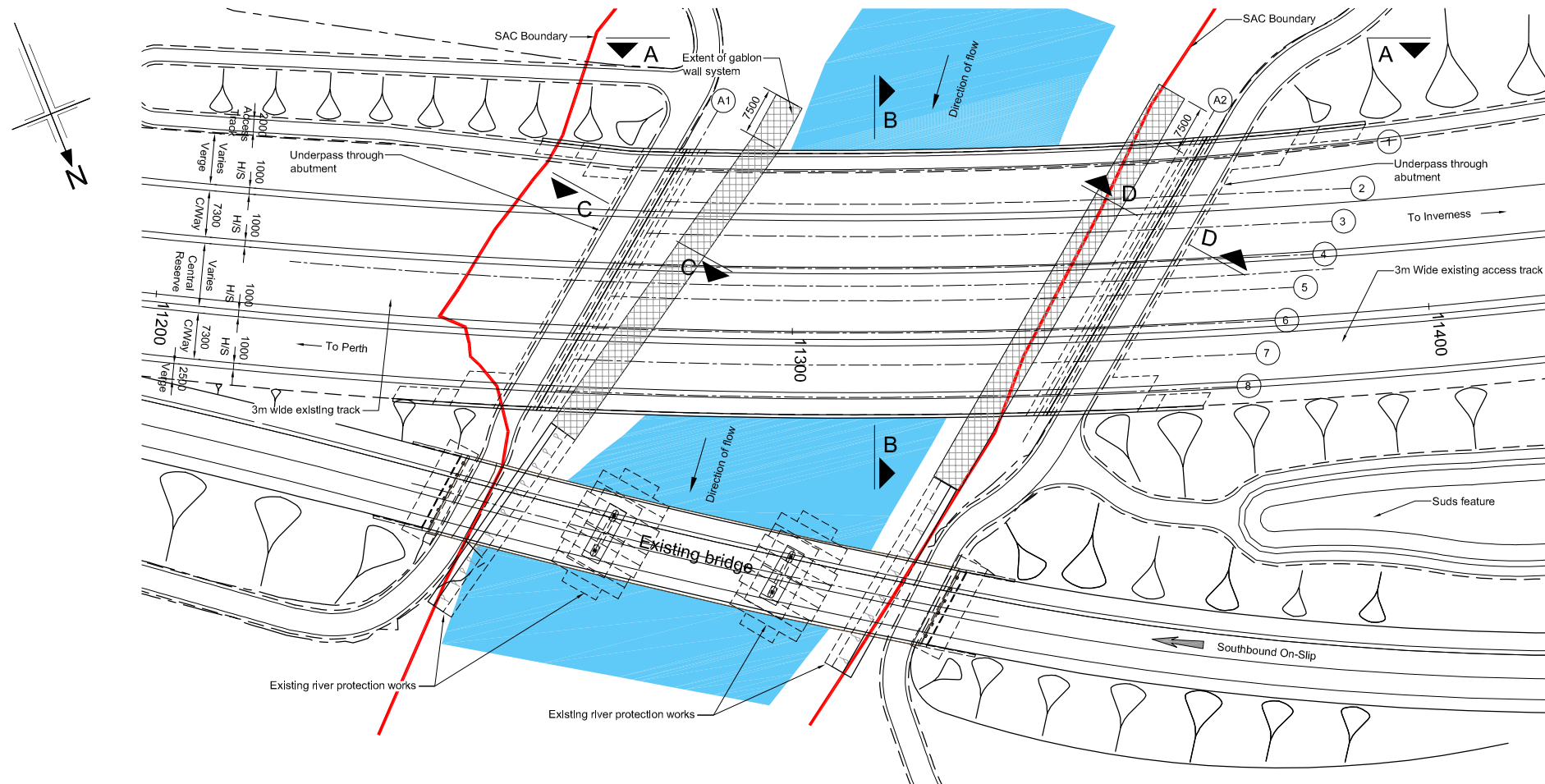
Jacobs No.      B2140005

Drawing number  
**Figure A.11.8.33**

Rev  
**0**

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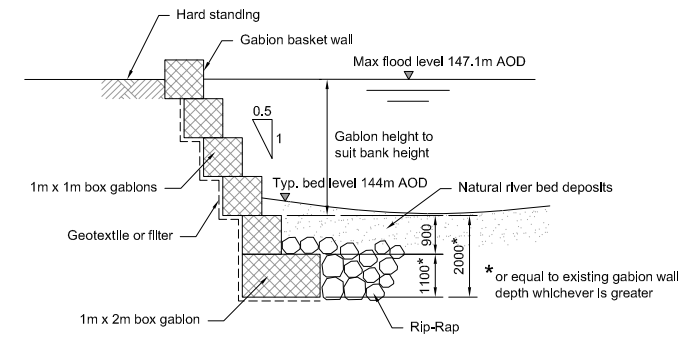
File: I:\Glen\07\PV01\ECBC\BWA\_Job\B2140005\_Killiecrankie to Plogowan\CAD\Watercourse Modifications\WF122.dwg Date: Aug 03, 2017 - 10:14am Plotted by: WOODJA



**PLAN**

SCALE 1 : 500

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:	
<b>CONSTRUCTION</b>	
-	Service survey required pre-construction
-	Condition of existing structure may not be as anticipated
-	Existing structure may not be accurately represented by record drawings
-	Position of existing structure may not be as shown
<b>MAINTENANCE / CLEANING</b>	
-	None
<b>DECOMMISSIONING / DEMOLITION</b>	
-	None
It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement	

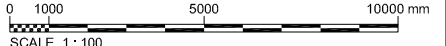


**DETAIL 2**

SCALE 1 : 100

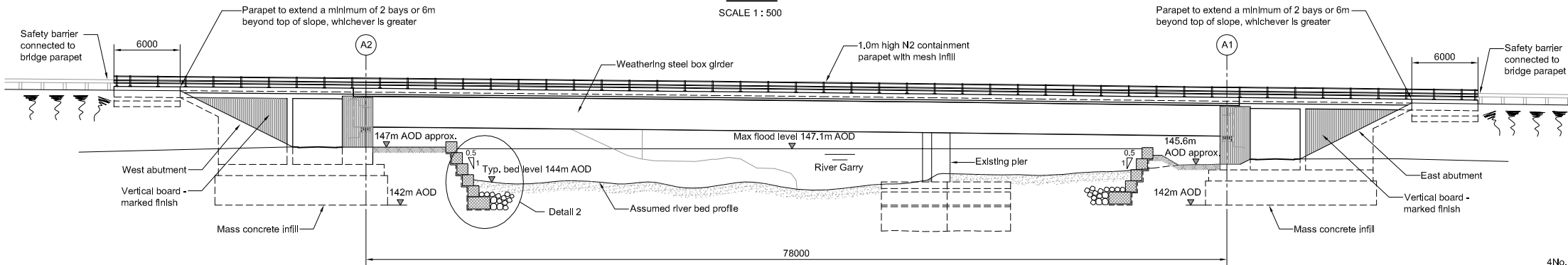


SCALE 1 : 500



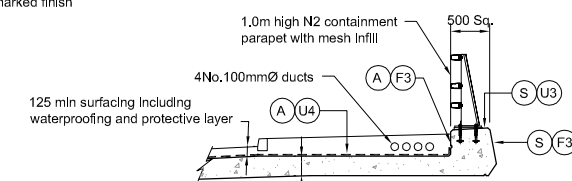
SCALE 1 : 100

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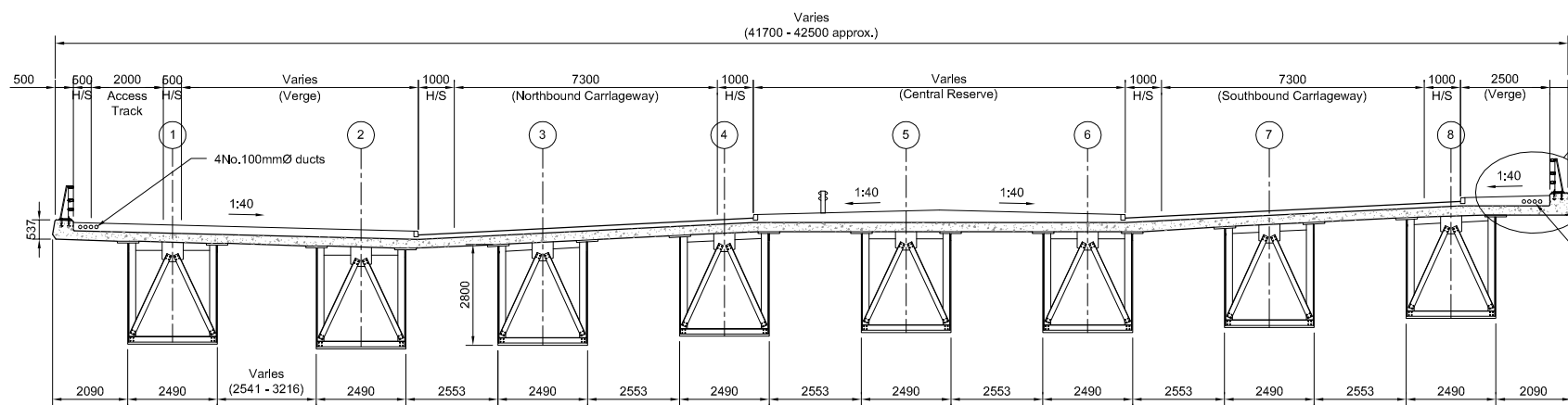
**ELEVATION A-A**

SCALE 1 : 250



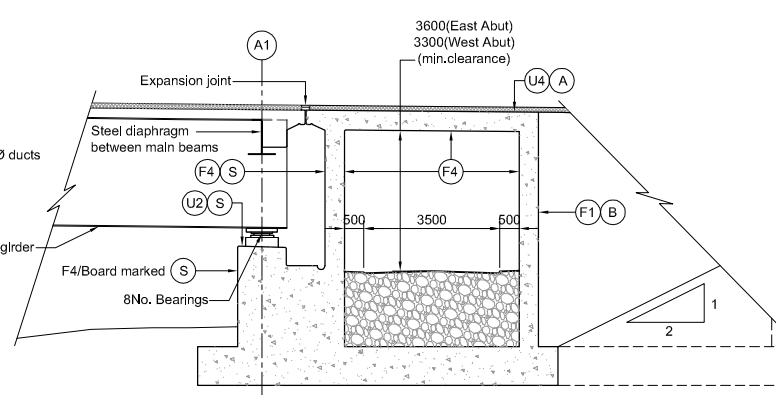
**DETAIL 1**

SCALE 1 : 50



**SECTION B-B**

SCALE 1 : 100



**SECTION C-C**

(SECTION D-D SIMILAR)

SCALE 1 : 100

Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Appr'd
P2	19/05/17	DMRB Stage 3 Report - Draft	MG	JA	MAM	ELM
P1	11/10/16	Design Flt 4 - Issue for Review	MG	JM	MAM	ELM

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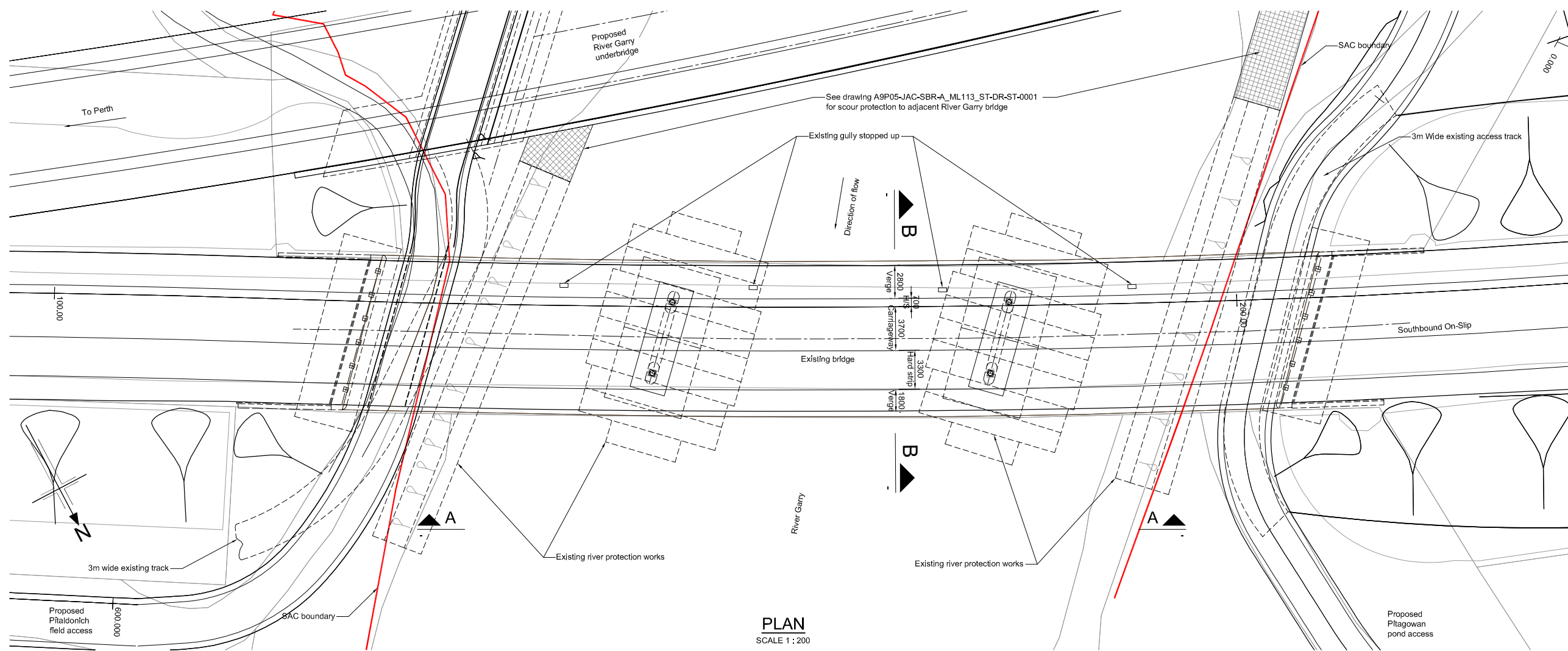
**KILLIECRANKIE TO GLEN GARRY RIVER GARRY UNDERBRIDGE GENERAL ARRANGEMENT**

Drawing status: **PRELIMINARY**

Scale	AS SHOWN @ A1	DO NOT SCALE
Jacobs No.	B2140005	

Drawing number: **Figure A.11.8.34(a)** Rev P2

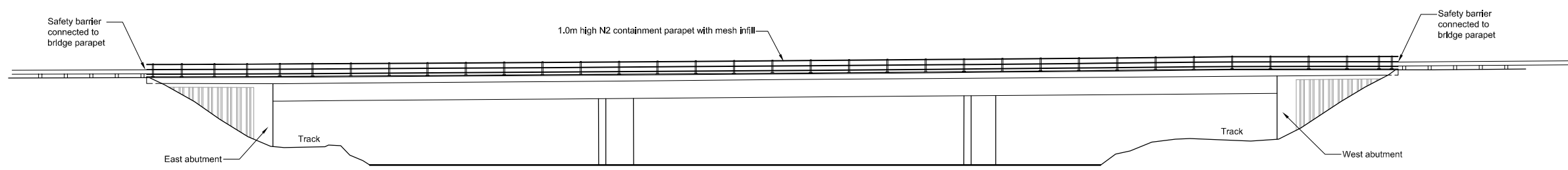
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



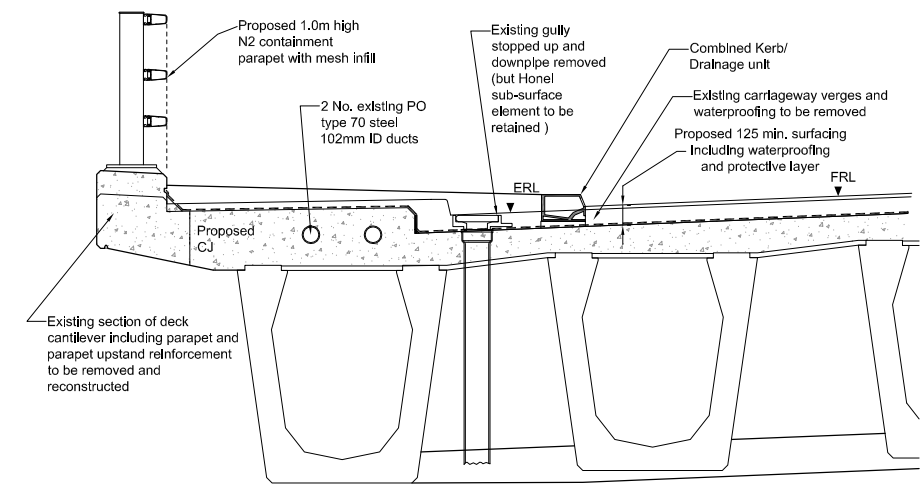
**PLAN**  
SCALE 1 : 200

- Notes.
- All dimensions are in millimetres unless noted otherwise.
  - All levels are in metres Above Ordnance Datum.
  - All chainages are in metres.
  - All exposed arrises to have 25x25 chamfers unless noted otherwise.
  - Concrete finishes denoted thus:  
 (F) - Formed  
 (U) - Unformed
  - Concrete protection to be as follows:  
 (S) - Surface impregnation in accordance with BD43 of the DMRB.  
 (A) - Spray applied waterproofing in accordance with CI 2003 of the Specification.  
 (B) - Waterproofing of all buried concrete surfaces in accordance with CI 2004 of the Specification.
  - All details shown on this drawing are indicative only and subject to development.

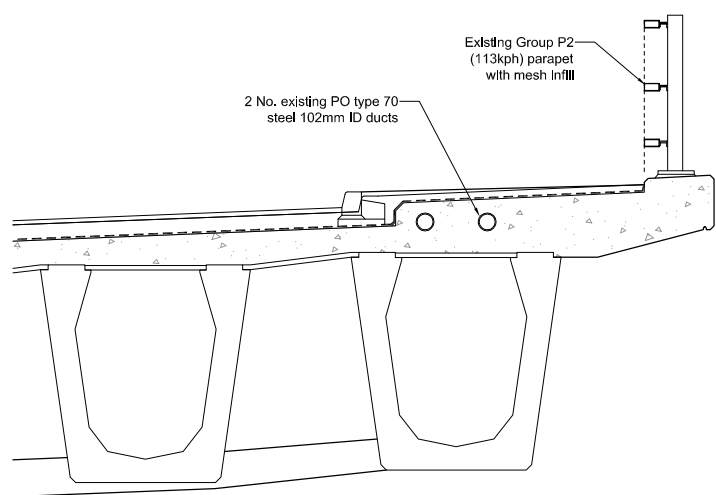
SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:	
<b>CONSTRUCTION</b>	
<ul style="list-style-type: none"> <li>Service survey required pre-construction</li> <li>Potential presence in existing structure of harmful substances causing damage to health to be established pre-demolition.</li> <li>Structure stability to be checked during break-out of existing structure</li> <li>Condition of existing structure may not be as anticipated.</li> <li>Existing structure may not be accurately represented by record drawings.</li> <li>Position of existing structure may not be as shown</li> </ul>	
<b>MAINTENANCE / CLEANING</b>	
<ul style="list-style-type: none"> <li>None</li> </ul>	
<b>DECOMMISSIONING / DEMOLITION</b>	
<ul style="list-style-type: none"> <li>None</li> </ul>	
It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement	



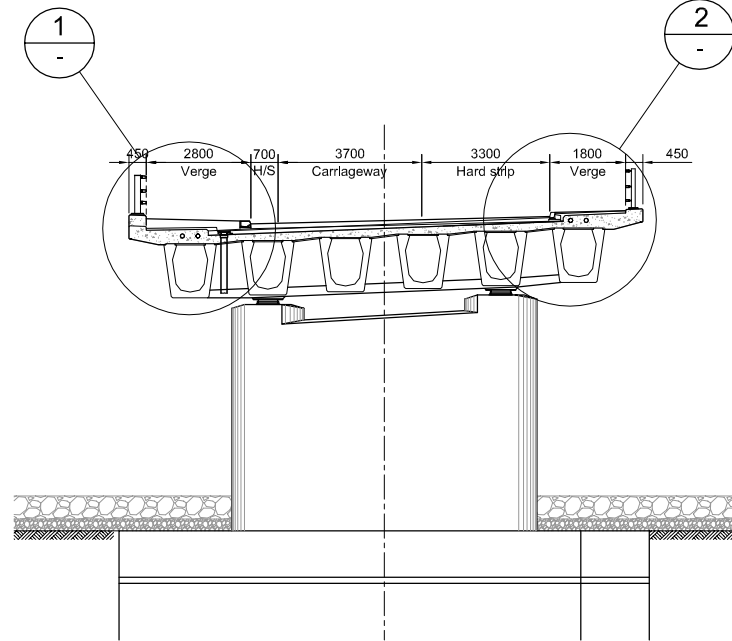
**ELEVATION A-A**  
SCALE 1 : 200



**DETAIL 1**  
SCALE 1 : 25



**DETAIL 2**  
SCALE 1 : 25



**SECTION B-B**  
SCALE 1 : 100

P1	30/05/17	DMRB Stage 3 Report - Draft	MG	CC	MAM	ELM
Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Apprv'd

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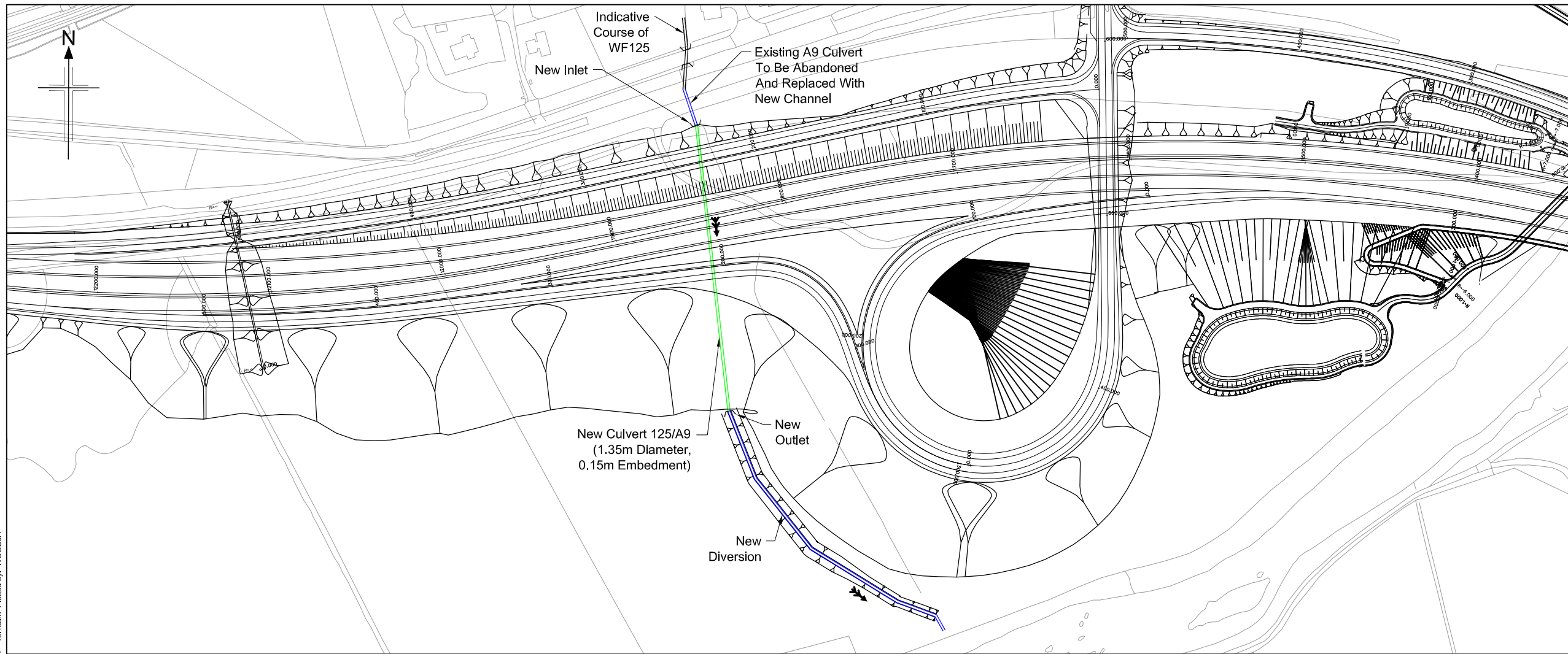
**KILLIECRANKIE TO GLEN GARRY  
PITALDONICH UNDERBRIDGE  
GENERAL ARRANGEMENT**

Drawing status: **PRELIMINARY**

Scale	AS SHOWN @ A1	DO NOT SCALE
Jacobs No.	B2140005	

Drawing number: **Figure A.11.8.34(b)** Rev P1

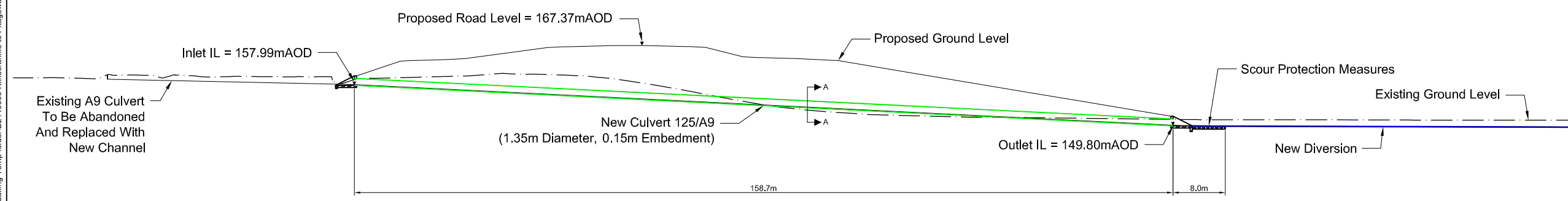
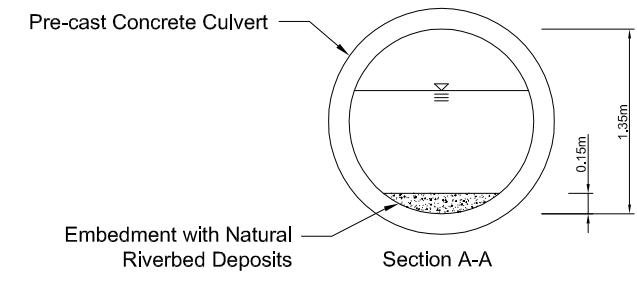
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



- Legend:**
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:**
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
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  6. Where required 'scour protection measures' shall be provided within the zone indicated on the drawing. The nature and the extent of the scour protection measure will be further developed at detailed design stage in accordance with the relevant provisions of DMRB, taking into account flow hydraulics, channel geometry and channel morphology.
  7. Where shown culverts shall be 'embedded' with natural river deposits to the depth shown.
  8. Where shown 'cascades' are required to safely convey the design flood event (0.5% AEP (200-year) plus allowance for climate change). The cascade geometry shown on the drawing is indicative only and will be subject to further development at detailed design stage. The nature of the cascade will take one of the following forms,
    - Bedrock channel cascade.
    - Natural cascade with natural gravels, cobbles and rock forming individual steps.
    - Concrete cascade with stone pitching.
 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

**SCHEMATIC PLAN**



**WATERCOURSE 125 LONGSECTION**

Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Apprv'd
0	18/01/17	FOR INFORMATION	CON	JW	LMG	

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**KILLIECRANKIE TO GLEN GARRY  
 PROPOSED MODIFICATIONS  
 TO CULVERT ON  
 WATERCOURSE WF125**

Drawing status: **FOR INFORMATION**

Scale: NTS @ A1 DO NOT SCALE

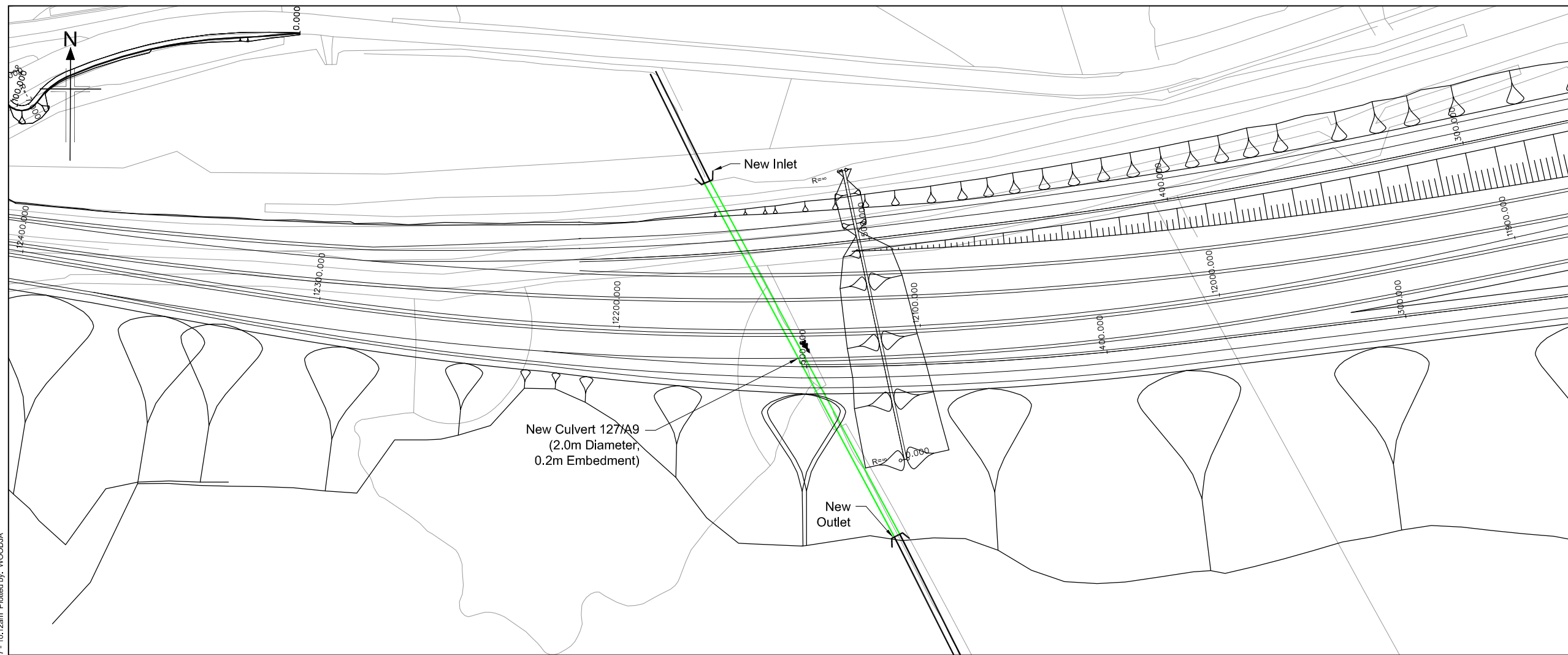
Jacobs No. B2140005

Drawing number: **Figure A.11.8.35** Rev: **0**

File: I:\Glarif\07\PV01\ECBC\BWA\_Joos\B2140005 A9 Dualling Temp folder\B2140005 Killiecrankie to Plogowan\CAD\Watercourse Modifications\WF125.dwg Date: Aug 03, 2017 - 10:13am Plotted by: WOODJIA

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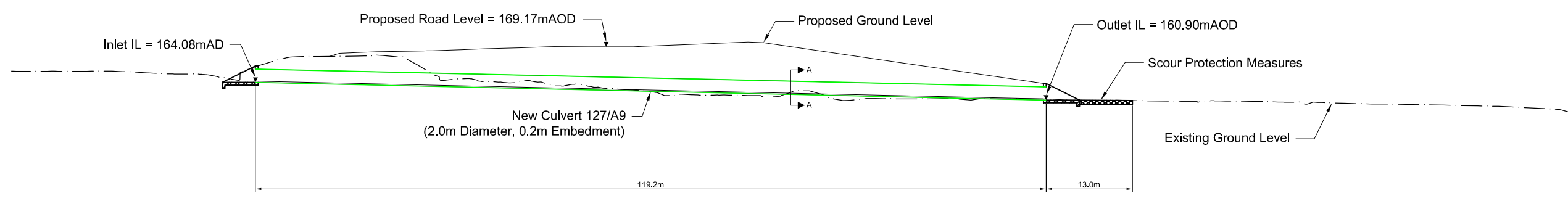
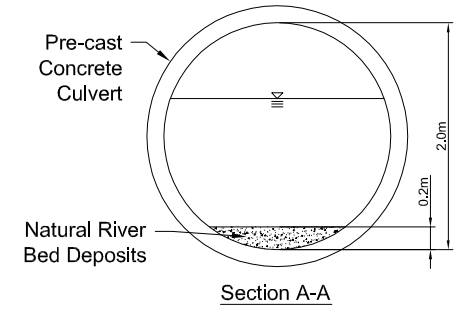
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SCHMATIC PLAN

- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:
1. All dimensions are in meters unless noted otherwise.
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    - Natural cascade with natural gravels, cobbles and rock forming individual steps.
    - Concrete cascade with stone pitching.
 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.



WATERCOURSE 127 LONGSECTION

Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Apprv'd
0	17/01/17	FOR INFORMATION	CON	JW	LMG	

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Drawing title  
**KILLIECRANKIE TO GLEN GARRY  
 PROPOSED MODIFICATIONS  
 TO CULVERT ON  
 WATERCOURSE WF127**

Drawing status  
**FOR INFORMATION**

Scale  
 NTS @ A1 DO NOT SCALE

Jacobs No.  
 B2140005

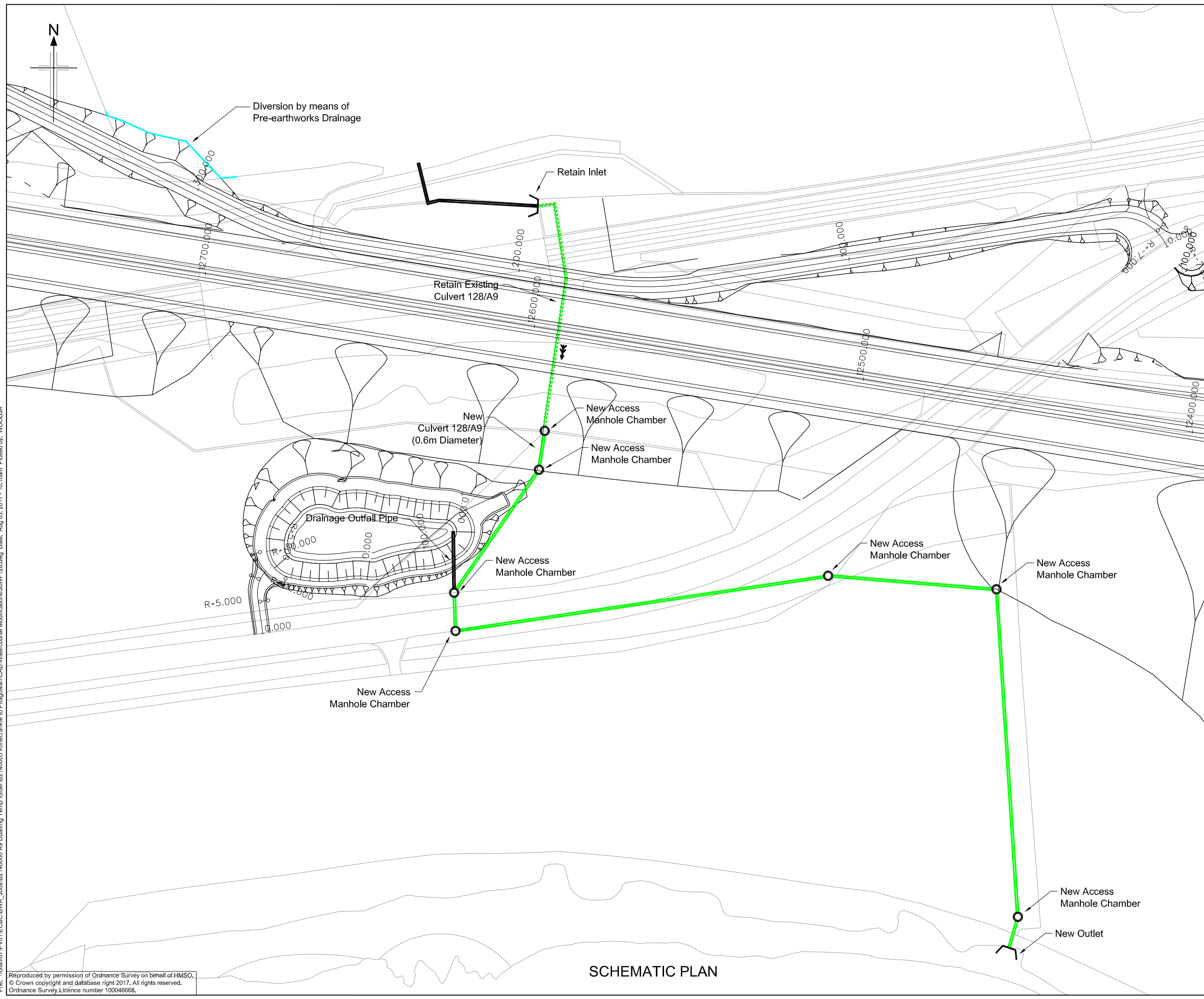
Drawing number  
**Figure A.11.8.36**

Rev  
**0**

File: I:\Glarif\07\PV01\ECBC\BWA\_Joosib2140005 A9 Dualling Temp folder\B2140005 A9 Dualling\CAD\Watercourse Modifications\WF127.dwg Date: Aug 03, 2017 - 10:12am Plotted by: WOODJA

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- Legend:**
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:**
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
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  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

Rev	Rev. Date	Purpose of revision	Drawn	Checkd	Rev'd	Apprv'd

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Drawing title  
**KILLIECRANKIE TO GLEN GARRY  
 PROPOSED MODIFICATIONS  
 TO CULVERT ON  
 WATERCOURSE WF128**

Drawing status: **FOR INFORMATION**

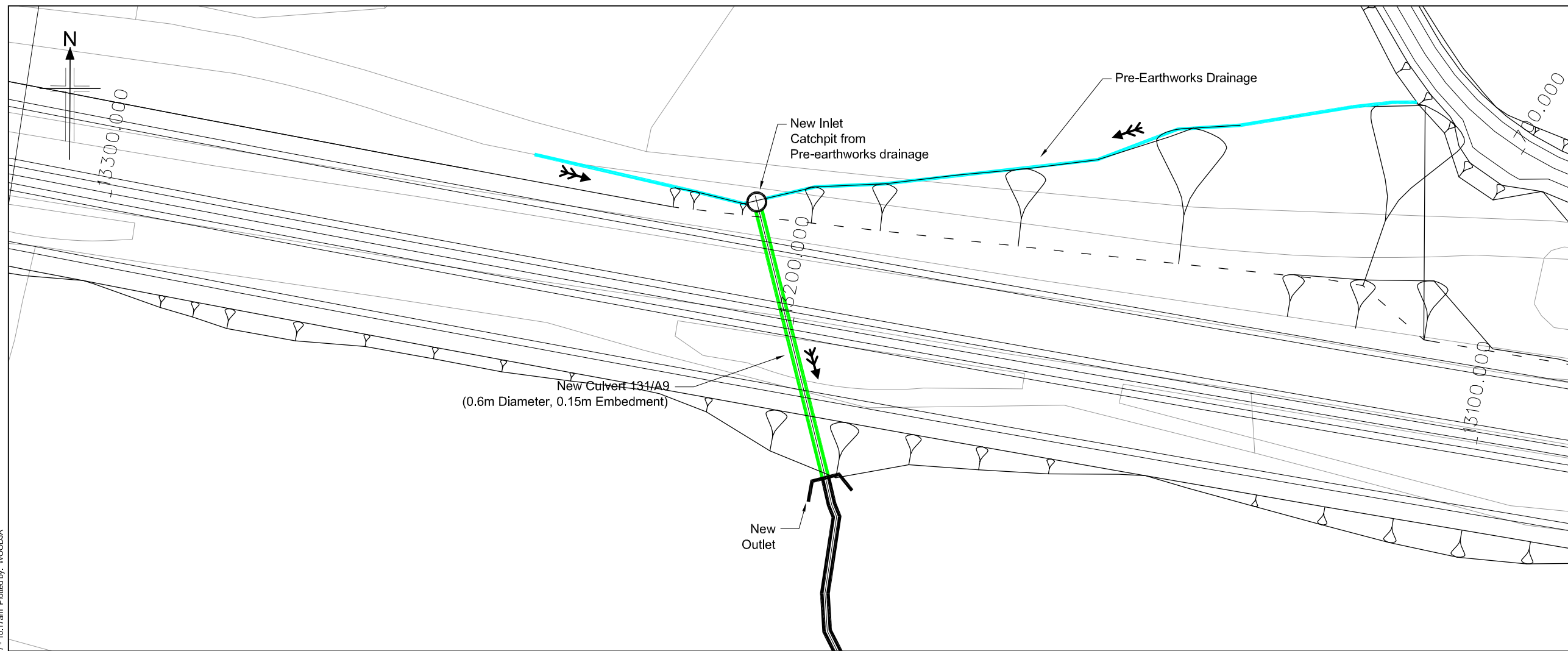
Scale	NTS @ A1	DO NOT SCALE
Jacobs No.	B2140005	

Drawing number: **Figure A.11.8.37** Rev: **0**

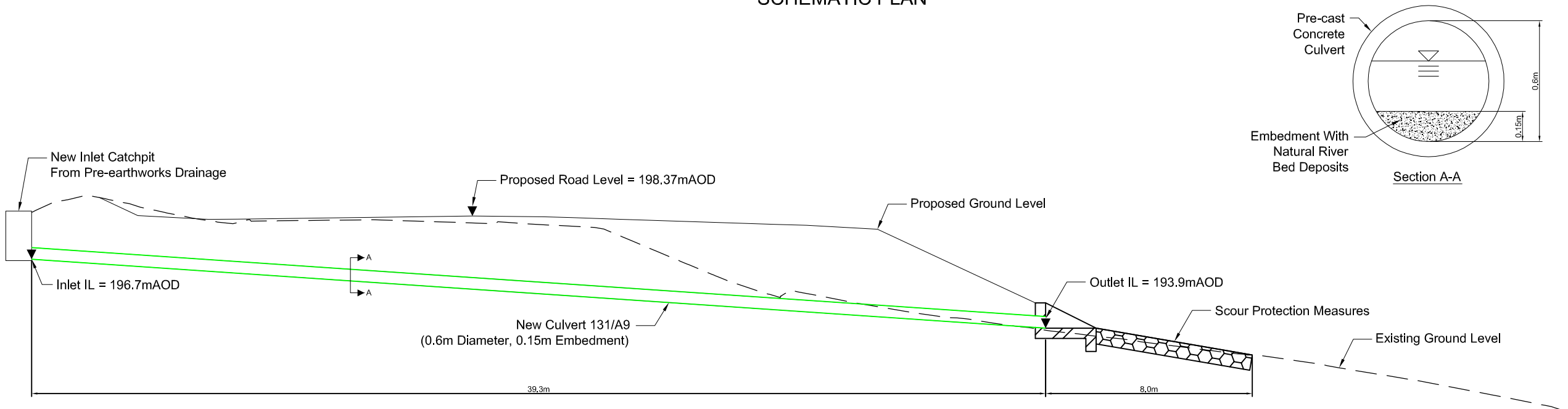
File: I:\Glarif\07\PV01\1ECBC\BWA\_Job\B2140005 A9 Dualling Temp folder\B2140005 A9 Dualling CAD\Watercourse Modifications\WF128.dwg Date: Aug 03, 2017 - 10:10am Plotted by: WOODJIA

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**SCHEMATIC PLAN**



SCHMATIC PLAN



WATERCOURSE 131 LONGSECTION

- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
  4. This drawing shall be read in conjunction with the 'Watercourse Crossing report' only and not in isolation.
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  6. Where required 'scour protection measures' shall be provided within the zone indicated on the drawing. The nature and the extent of the scour protection measure will be further developed at detailed design stage in accordance with the relevant provisions of DMRB, taking into account flow hydraulics, channel geometry and channel morphology.
  7. Where shown culverts shall be 'embedded' with natural river deposits to the depth shown.
  8. Where shown 'cascades' are required to safely convey the design flood event (0.5% AEP (200-year) plus allowance for climate change). The cascade geometry shown on the drawing is indicative only and will be subject to further development at detailed design stage. The nature of the cascade will take one of the following forms,
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 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Apprv'd
0	17/01/17	FOR INFORMATION	CON	JW	LMG	



Drawing title  
**KILLIECRANKIE TO GLEN GARRY  
 PROPOSED MODIFICATIONS  
 TO CULVERT ON  
 WATERCOURSE WF131**

Drawing status  
**FOR INFORMATION**

Scale  
 NTS @ A1      DO NOT SCALE

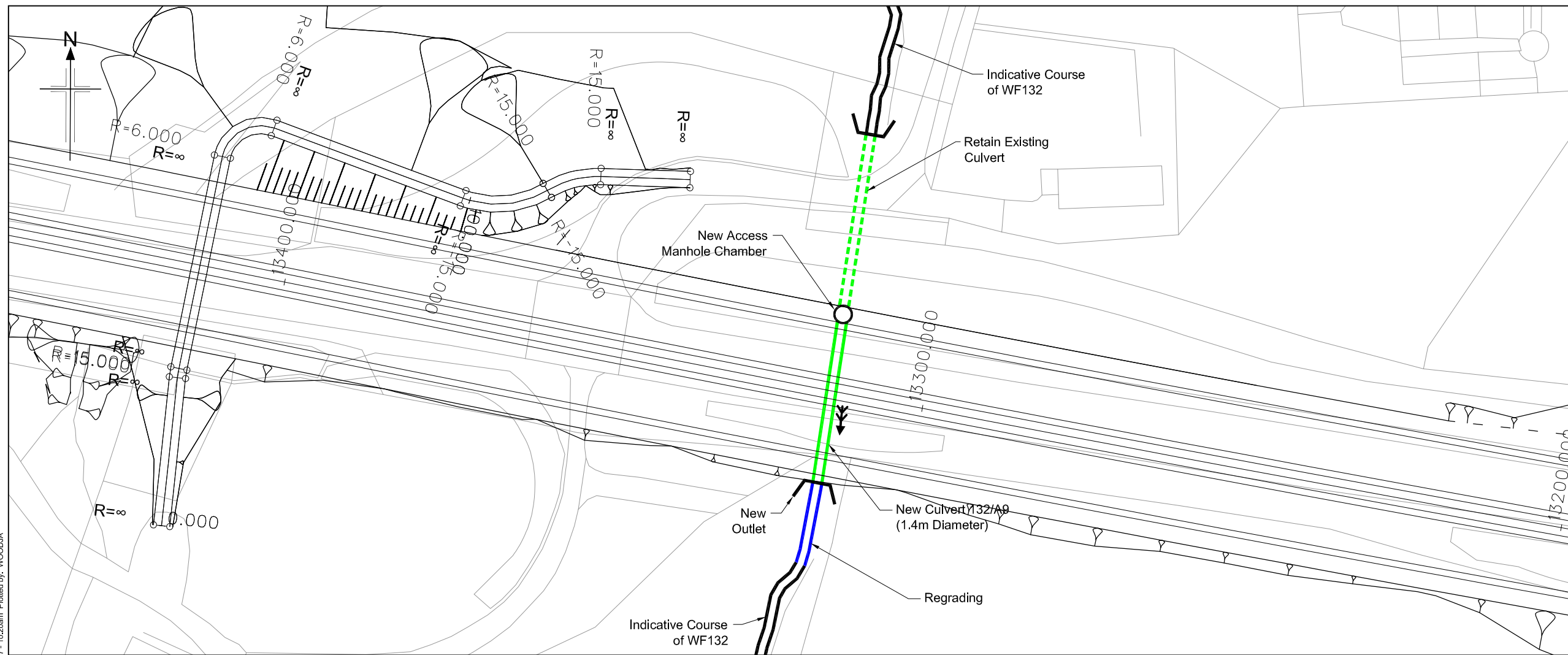
Jacobs No.      B2140005

Drawing number  
**Figure A.11.8.38**

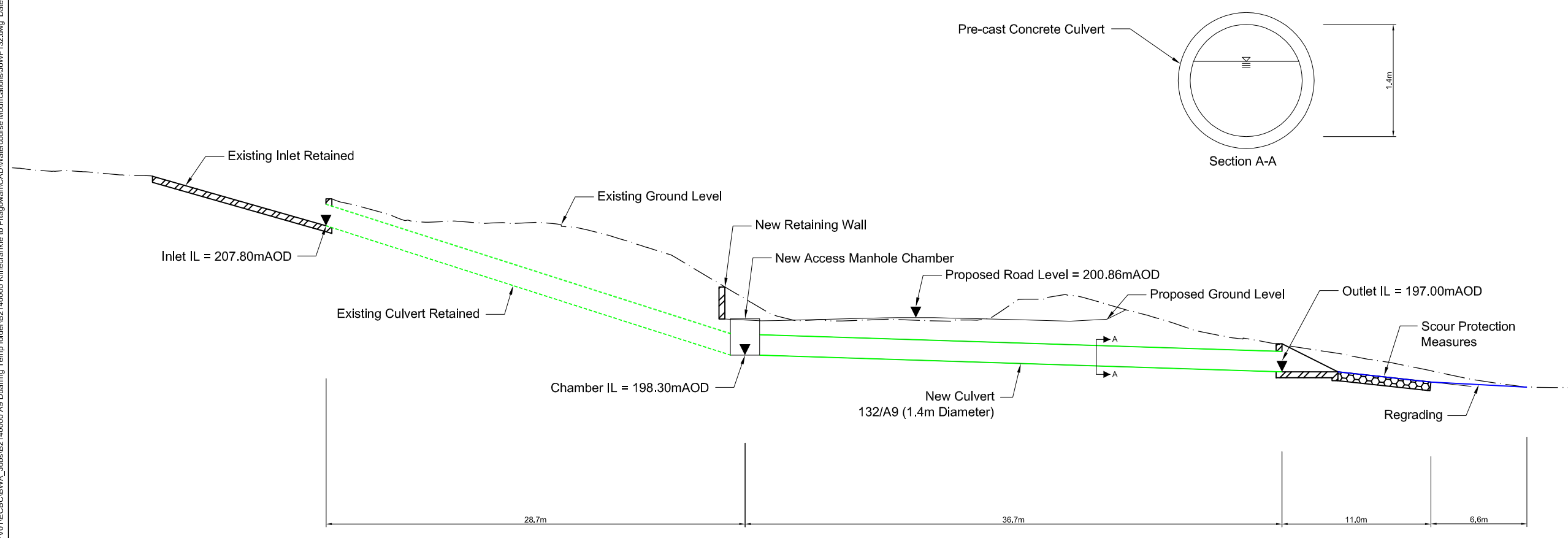
Rev  
**0**

File: I:\Glarif\07\PV01\ECBC\BWA\_Joosib2140005 A9 Dualing Temp folder\B2140005 A9 Dualing CAD\Watercourse Modifications\WF131.dwg Date: Aug 03, 2017 - 10:17am Plotted by: WOODJA  
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SCHEMATIC PLAN



WATERCOURSE 132 LONGSECTION

- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
  4. This drawing shall be read in conjunction with the 'Watercourse Crossing report' only and not in isolation.
  5. All 'new' and 'extended' culverts have been designed in accordance with the relevant provisions of DMRB.
  6. Where required 'scour protection measures' shall be provided within the zone indicated on the drawing. The nature and the extent of the scour protection measure will be further developed at detailed design stage in accordance with the relevant provisions of DMRB, taking into account flow hydraulics, channel geometry and channel morphology.
  7. Where shown culverts shall be 'embedded' with natural river deposits to the depth shown.
  8. Where shown 'cascades' are required to safely convey the design flood event (0.5% AEP (200-year) plus allowance for climate change). The cascade geometry shown on the drawing is indicative only and will be subject to further development at detailed design stage. The nature of the cascade will take one of the following forms,
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    - Natural cascade with natural gravels, cobbles and rock forming individual steps.
    - Concrete cascade with stone pitching.
 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

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**KILLIECRANKIE TO GLEN GARRY PROPOSED MODIFICATIONS TO CULVERT ON WATERCOURSE WF132**

Drawing status: **FOR INFORMATION**

Scale: NTS @ A1 DO NOT SCALE

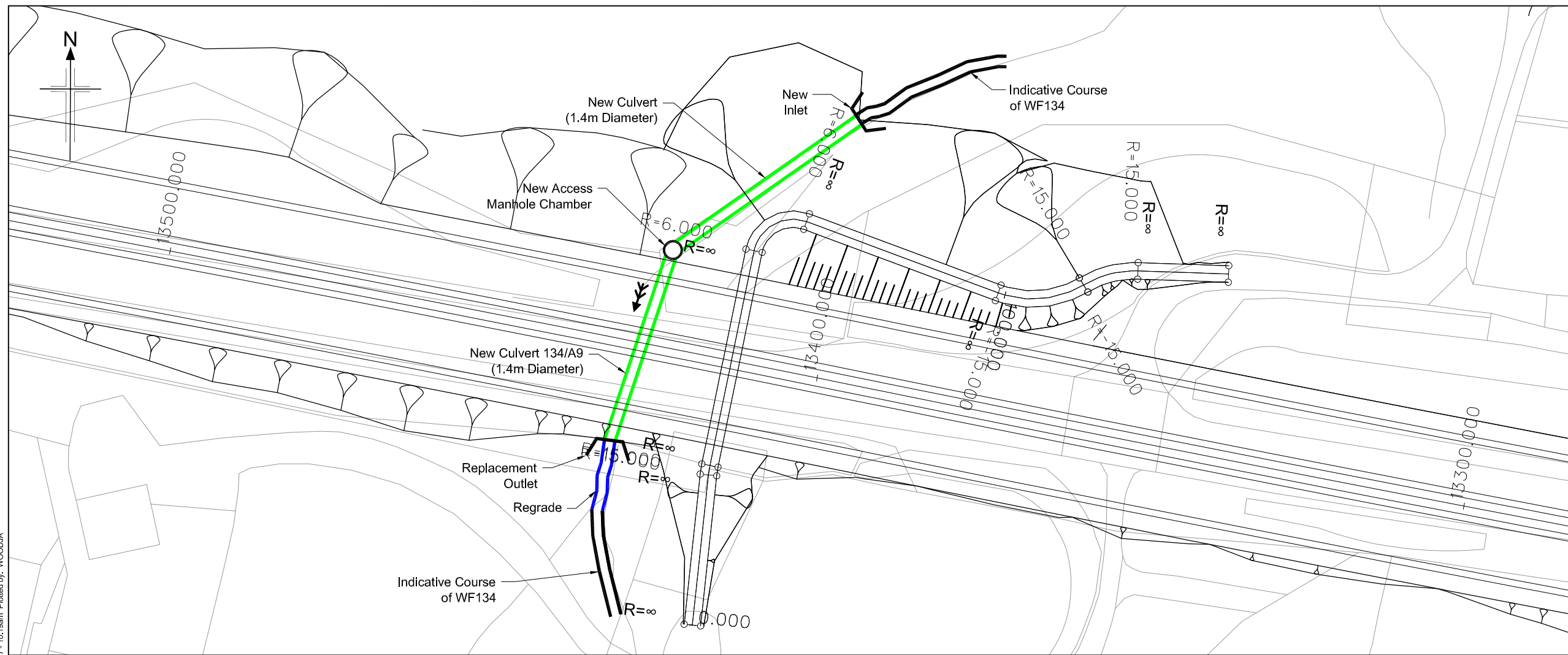
Jacobs No. B2140005

Drawing number: **Figure A.11.8.39** Rev: **0**

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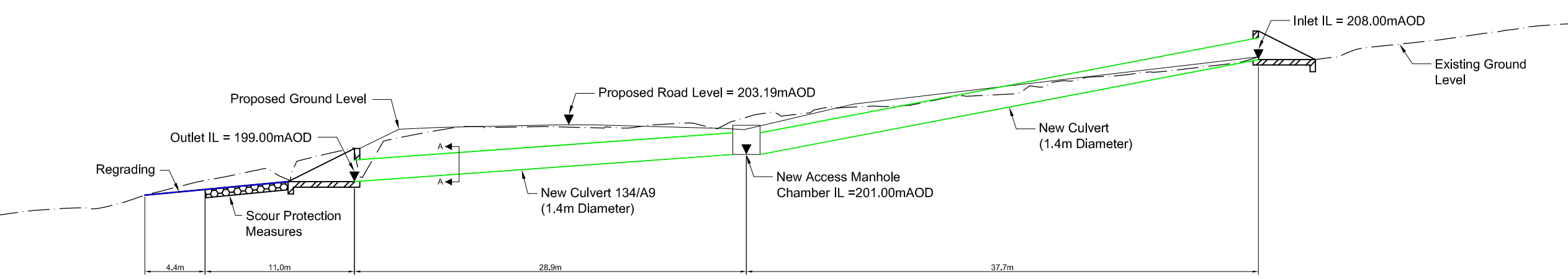
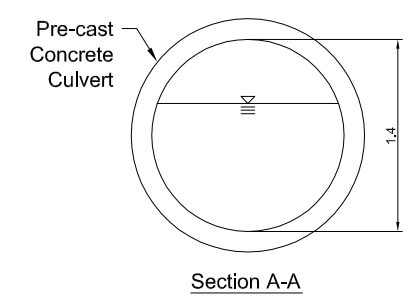
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- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
  4. This drawing shall be read in conjunction with the 'Watercourse Crossing report' only and not in isolation.
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 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

**SCHEMATIC PLAN**



**WATERCOURSE 134 LONGSECTION**

Rev	Rev. Date	Purpose of revision	Drawn	Checkd	Rev'd	Apprv'd
0	17/01/17	FOR INFORMATION				

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**KILLIECRANKIE TO GLEN GARRY PROPOSED MODIFICATIONS TO CULVERT ON WATERCOURSE WF134**

Drawing status: **FOR INFORMATION**

Scale: NTS @ A1 DO NOT SCALE

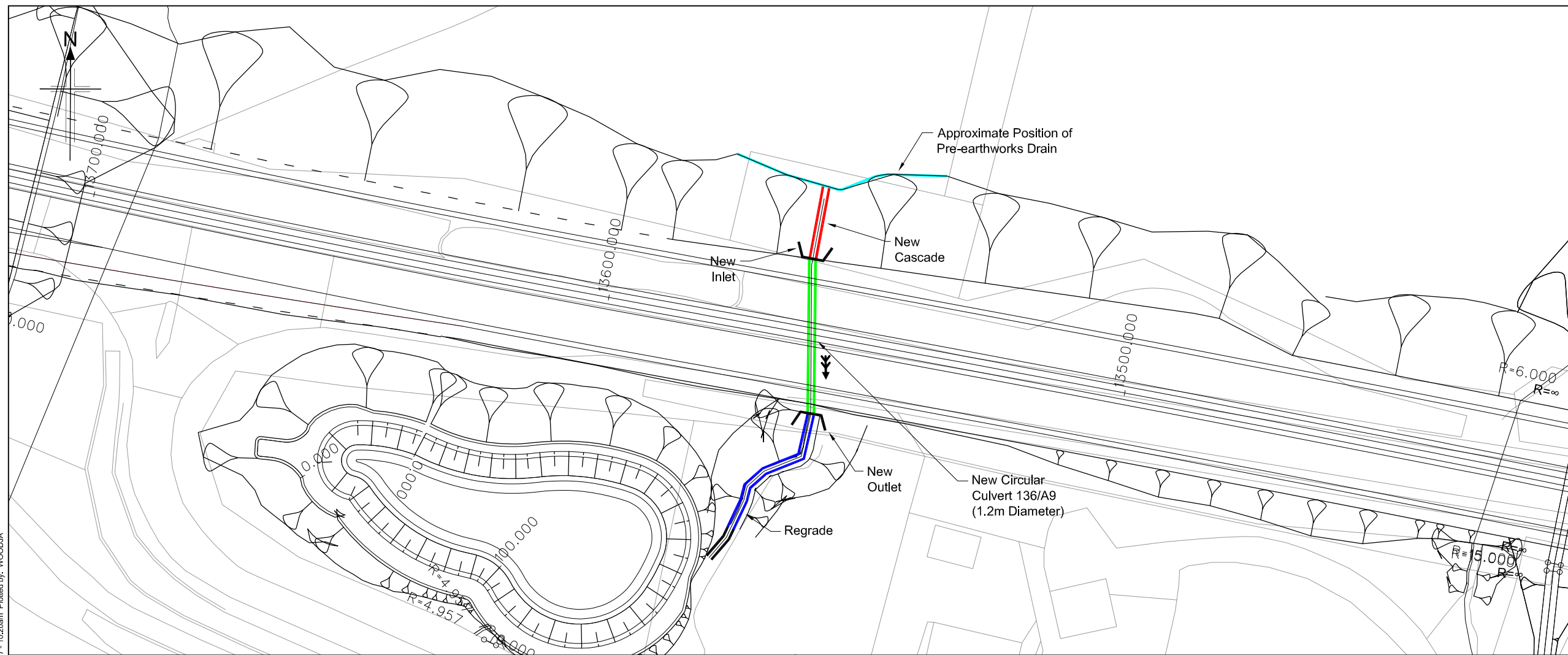
Jacobs No. B2140005

Drawing number: **Figure A.11.8.40** Rev: **0**

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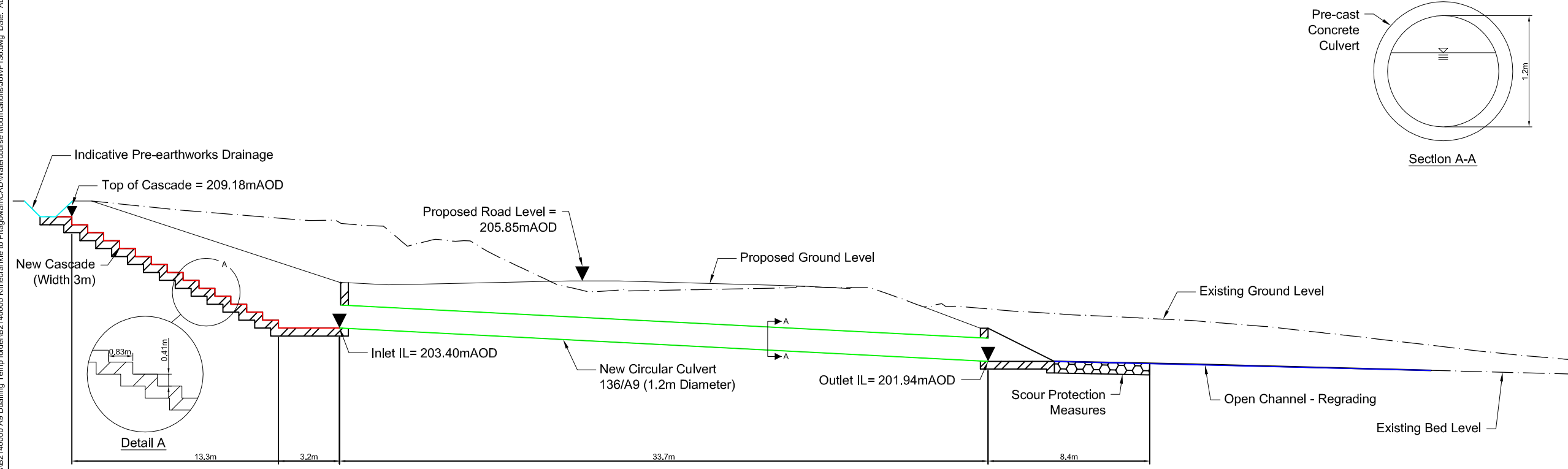
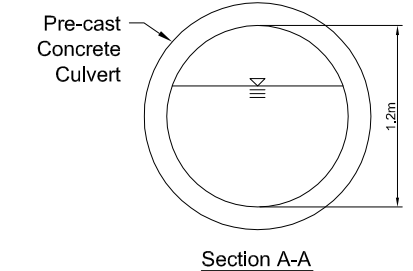
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SCHEMATIC PLAN

- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

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  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.



WATERCOURSE 136 LONGSECTION

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Drawing title  
**KILLIECRANKIE TO GLEN GARRY  
 PROPOSED MODIFICATIONS  
 TO CULVERT ON  
 WATERCOURSE WF136**

Drawing status  
**FOR INFORMATION**

Scale  
 NTS @ A1 DO NOT SCALE

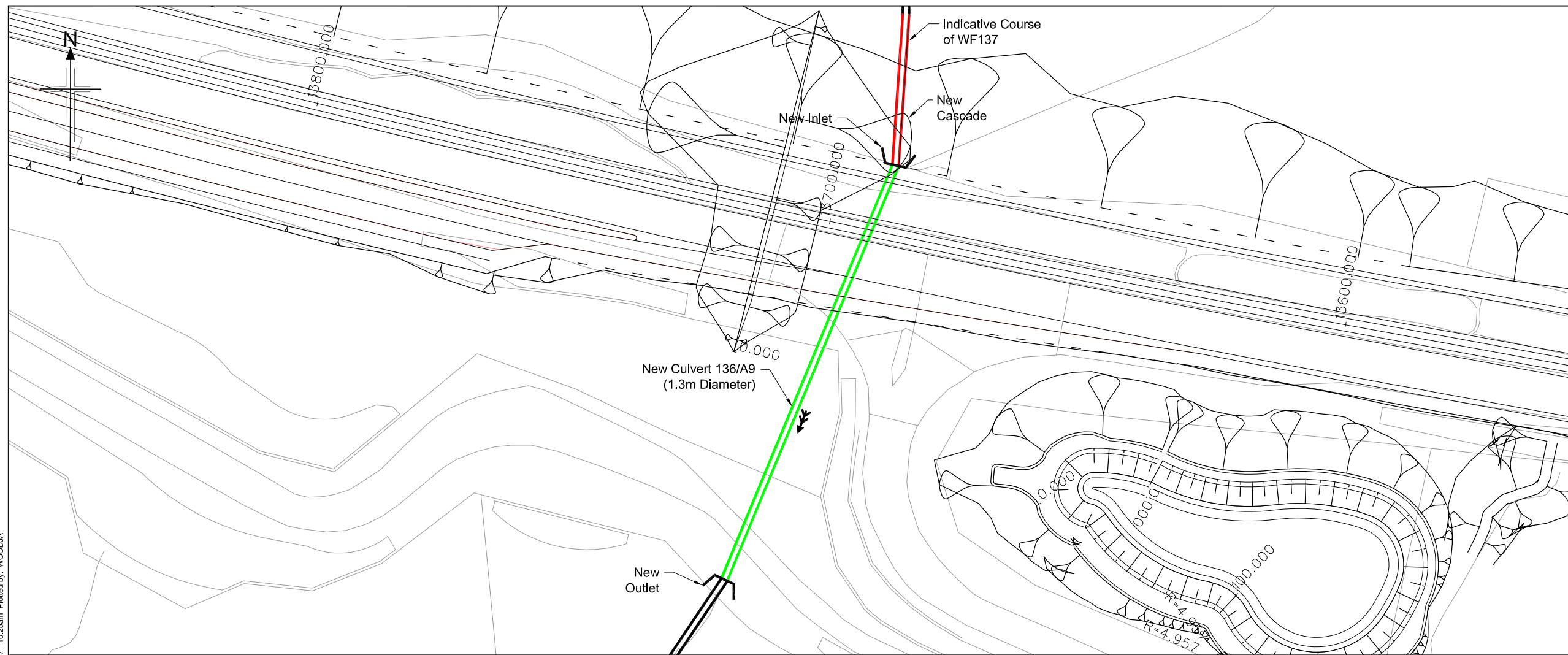
Jacobs No. B2140005

Drawing number  
**Figure A.11.8.41** Rev 0

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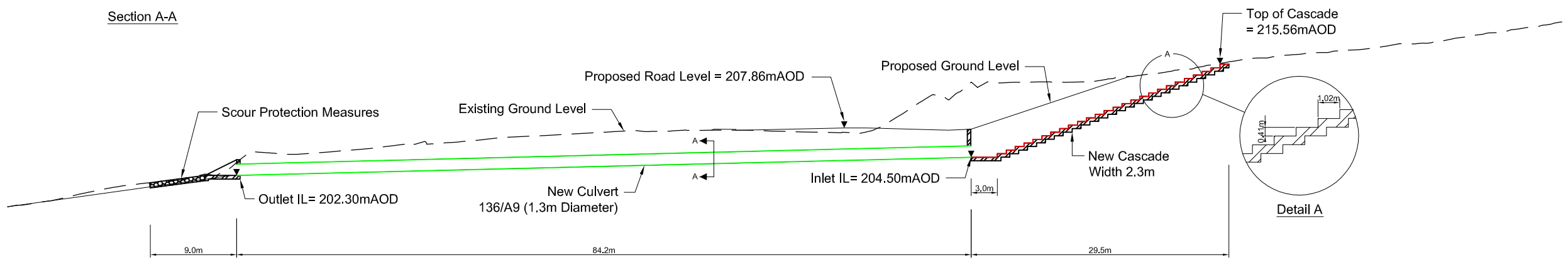
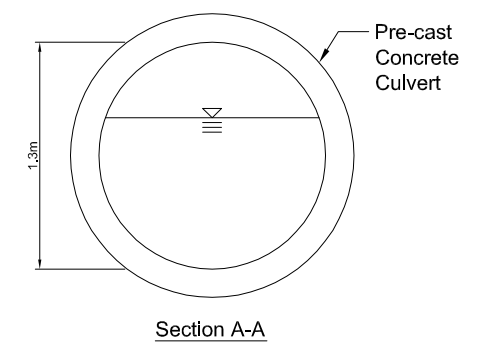
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- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
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**SCHEMATIC PLAN**



**WATERCOURSE 137 LONGSECTION**

Rev	Rev. Date	Purpose of revision	Drawn	Checkd	Rev'd	Apprv'd
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**KILLIECRANKIE TO GLEN GARRY PROPOSED MODIFICATIONS TO CULVERT ON WATERCOURSE WF137**

Drawing status: **FOR INFORMATION**

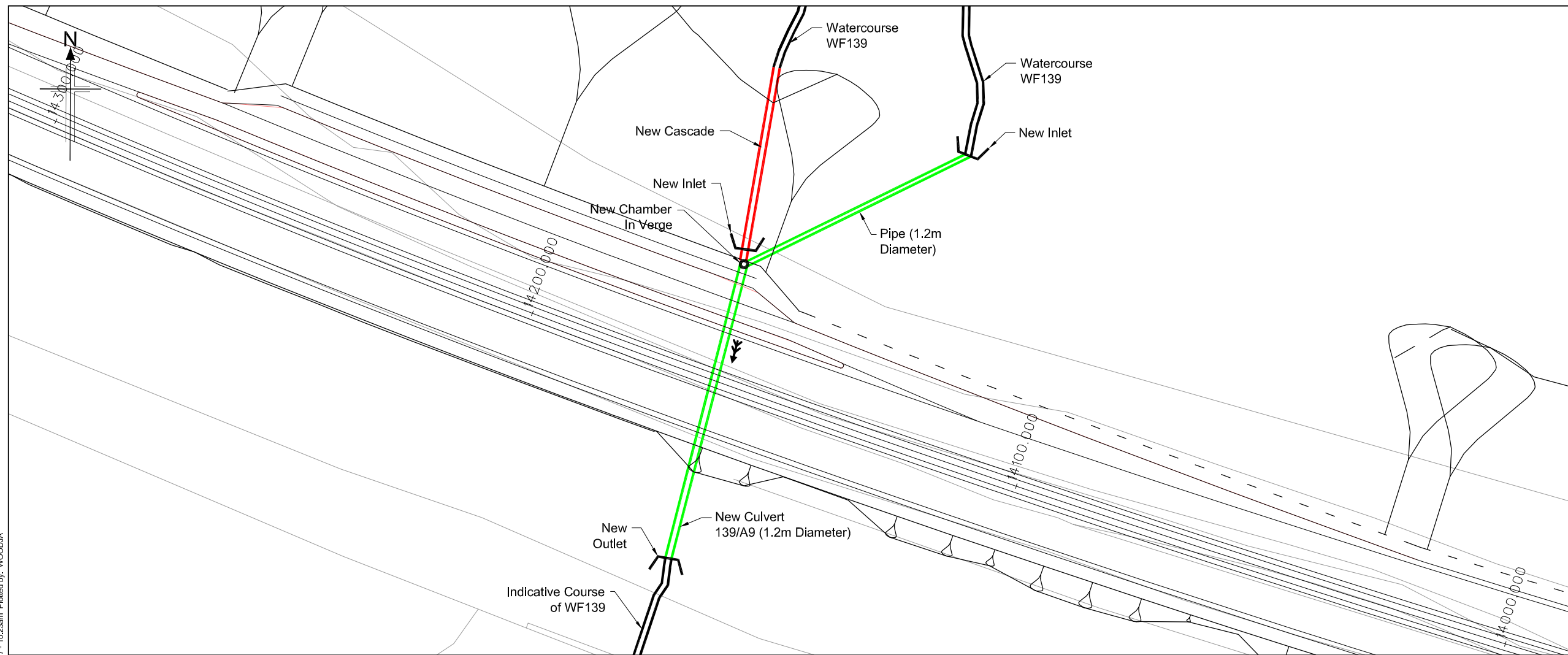
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Jacobs No. B2140005

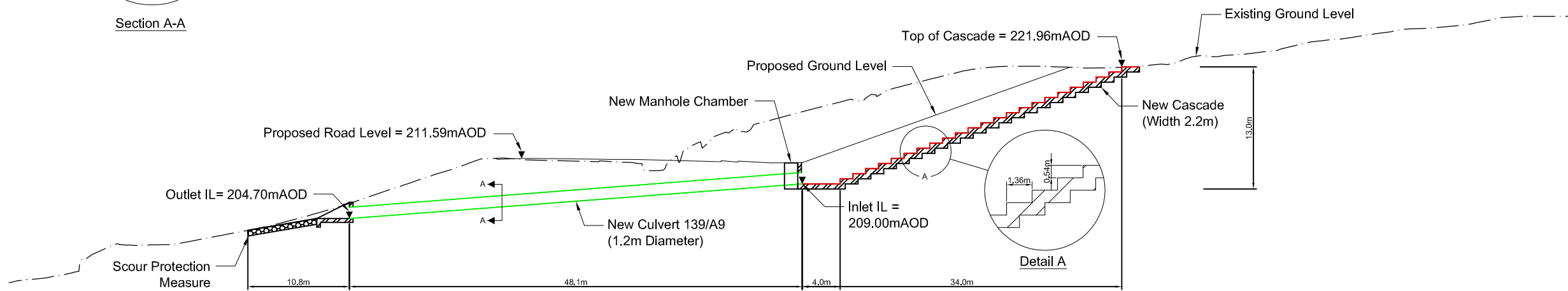
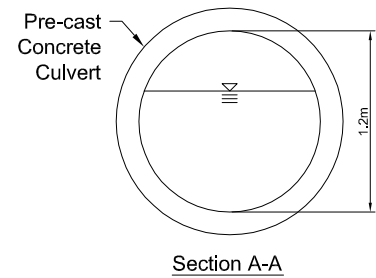
Drawing number: **Figure A.11.8.42** Rev: **0**

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SCHEMATIC PLAN



WATERCOURSE 139 LONGSECTION

- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:
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Drawing title  
**KILLIECRANKIE TO GLEN GARRY  
 PROPOSED MODIFICATIONS  
 TO CULVERT ON  
 WATERCOURSE WF139**

Drawing status  
**FOR INFORMATION**

Scale  
 NTS @ A1 DO NOT SCALE

Jacobs No.  
 B2140005

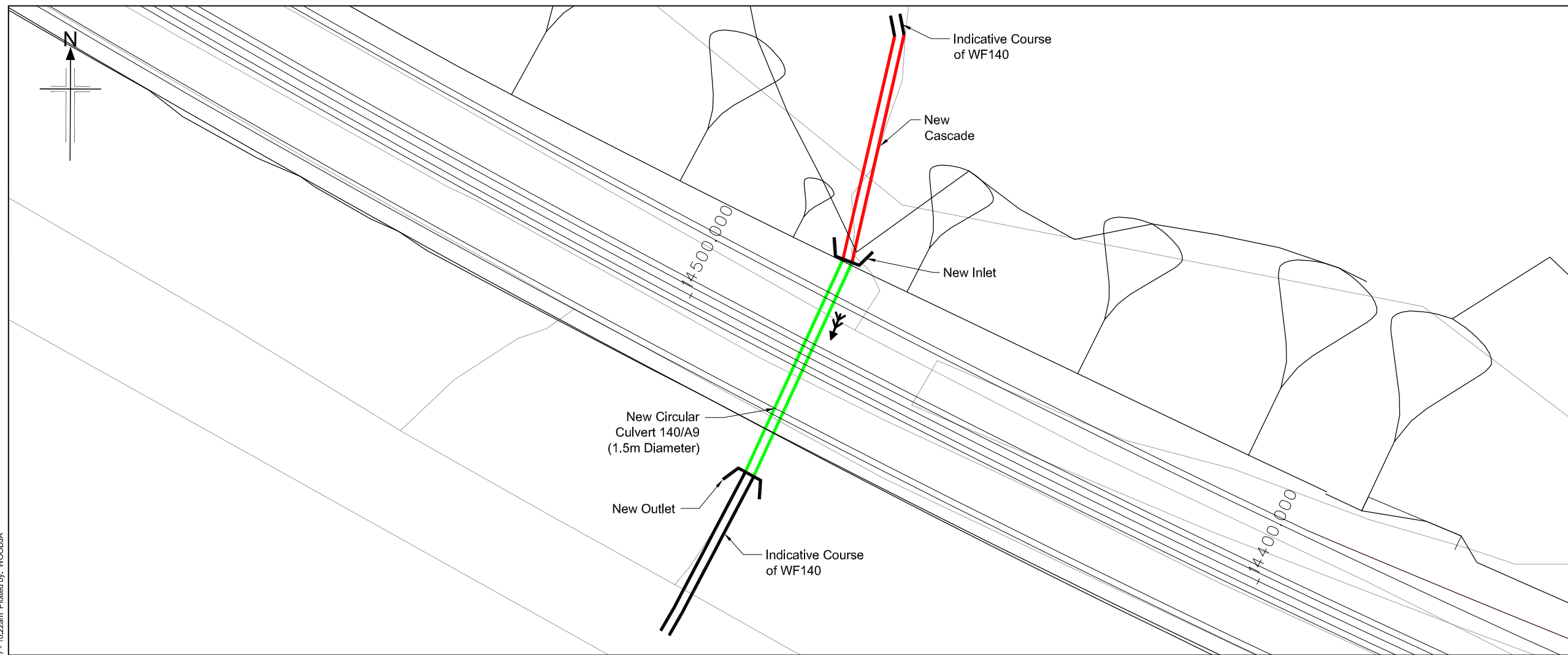
Drawing number  
**Figure A.11.8.43**

Rev  
**0**

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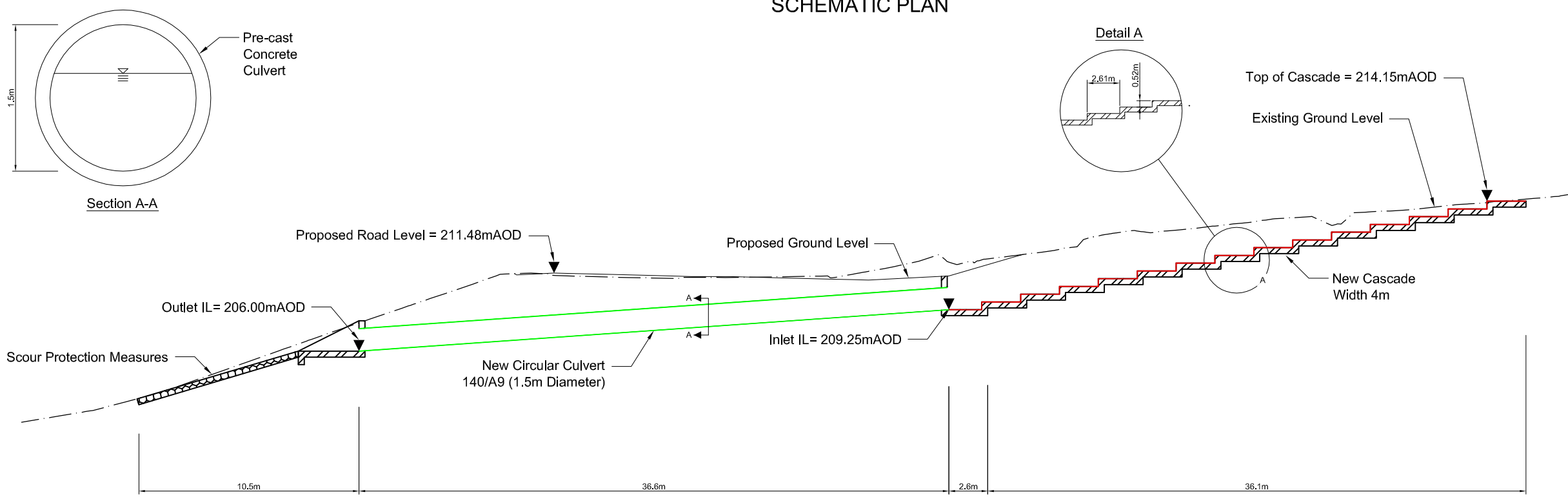
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- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:
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  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

**SCHEMATIC PLAN**



**WATERCOURSE 140 LONGSECTION**

D	17/01/17	FOR INFORMATION	CON	JW	LMG	
Rev	Rev. Date	Purpose of revision	Drawn	Checkd	Rev'd	Apprv'd



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Drawing title  
**KILLIECRANKIE TO GLEN GARRY PROPOSED MODIFICATIONS TO CULVERT ON WATERCOURSE WF140**

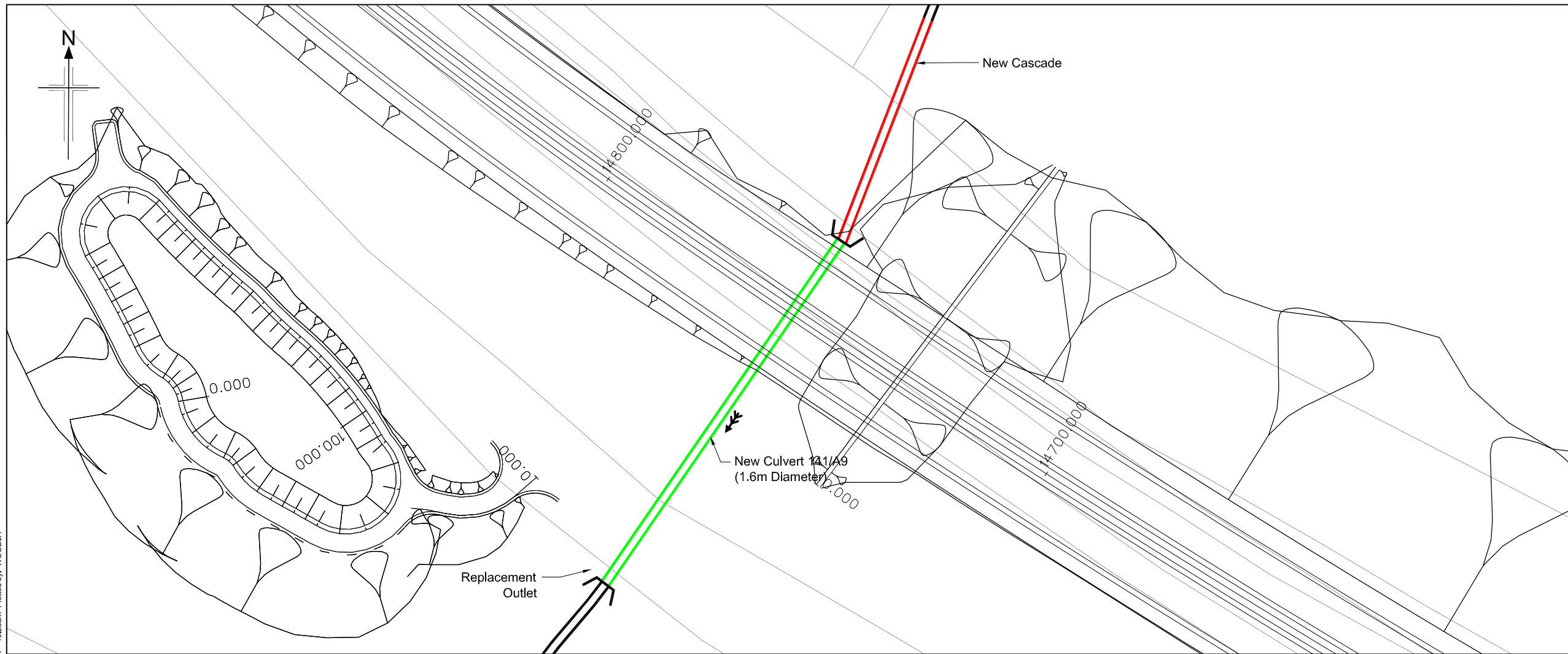
Drawing status	FOR INFORMATION	
Scale	NTS @ A1	DO NOT SCALE
Jacobs No.	B2140005	

Drawing number	Figure A.11.8.44	Rev	0
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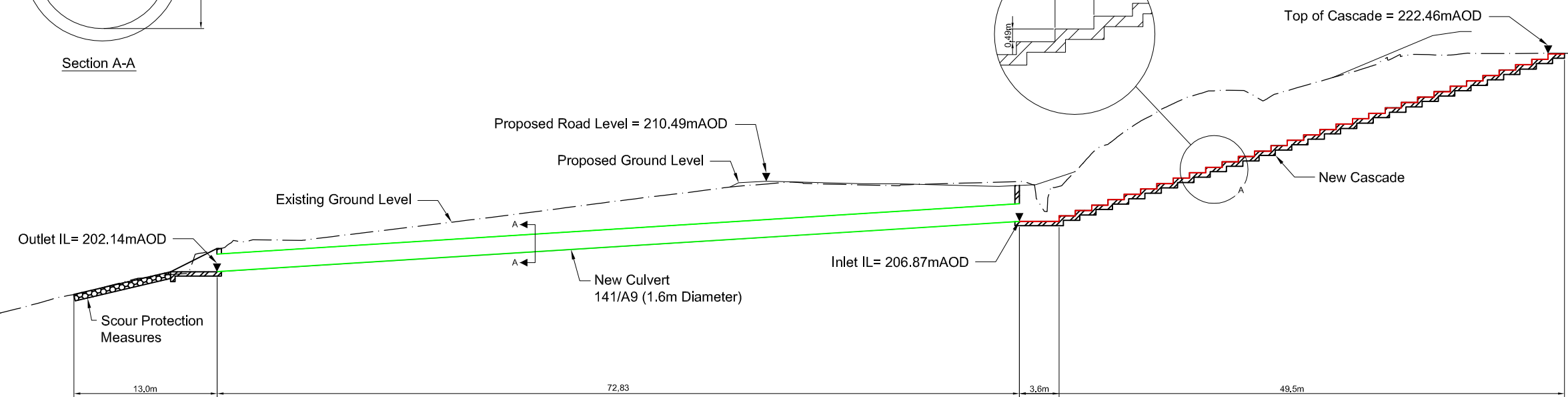
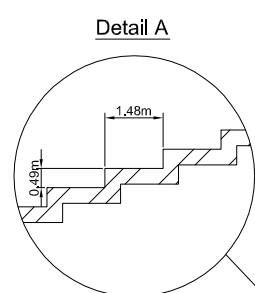
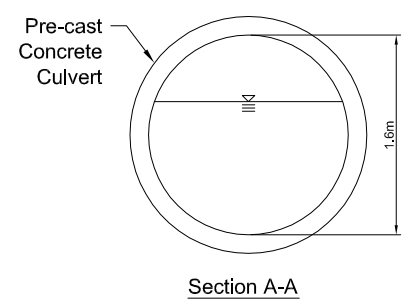
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- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:
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    - Natural cascade with natural gravels, cobbles and rock forming individual steps.
    - Concrete cascade with stone pitching.
 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

SCHEMATIC PLAN



WATERCOURSE 141 LONGSECTION

Rev	Rev. Date	Purpose of revision	Drawn	Checkd	Rev'd	Apprv'd
0	17/01/17	FOR INFORMATION	COR	JW	LMG	

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 Tel: +44(0)141 243 9000 Fax: +44(0)141 226 3109  
 www.jacobs.com



Drawing title  
**KILLIECRANKIE TO GLEN GARRY  
 PROPOSED MODIFICATIONS  
 TO CULVERT ON  
 WATERCOURSE WF141**

Drawing status  
**FOR INFORMATION**

Scale  
 NTS @ A1 DO NOT SCALE

Jacobs No. B2140005

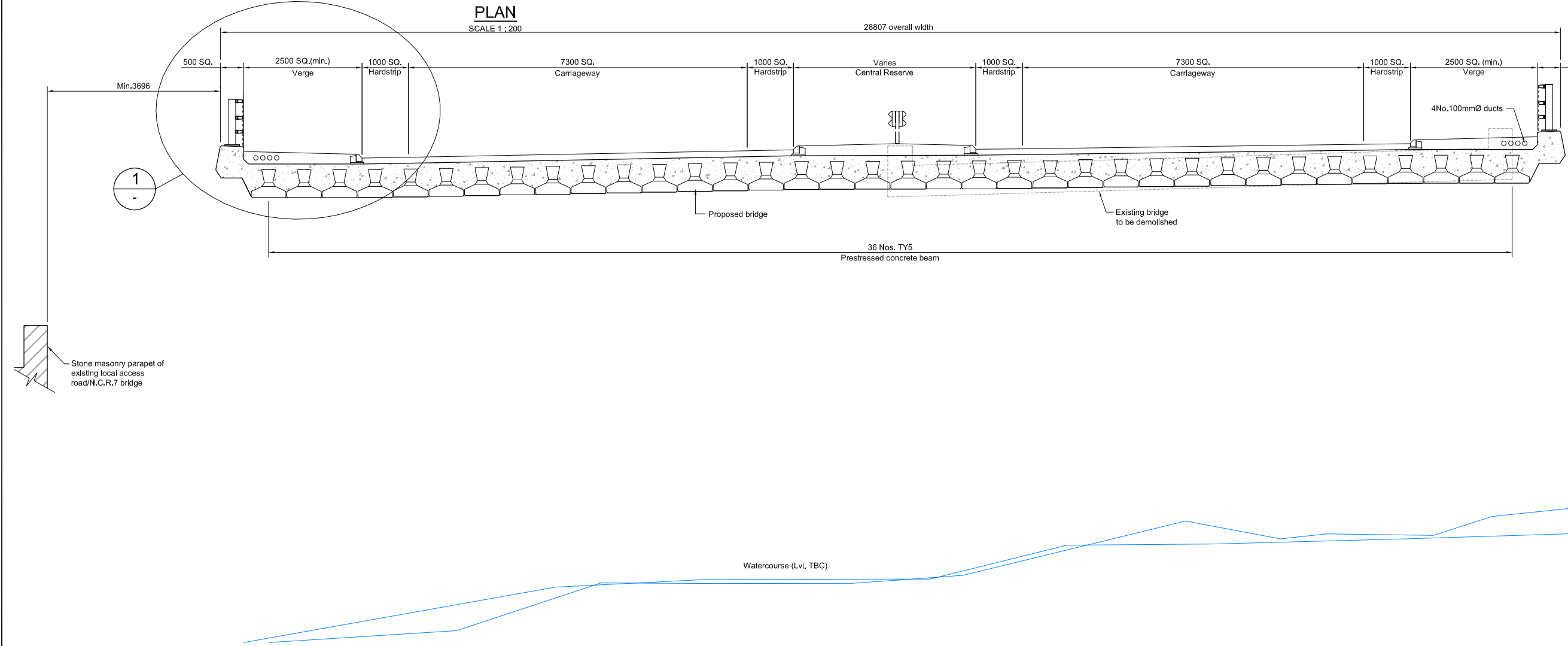
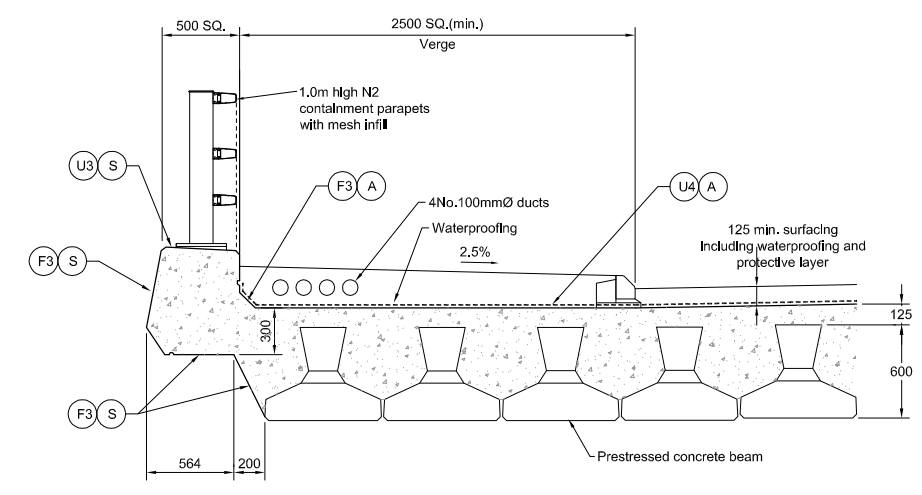
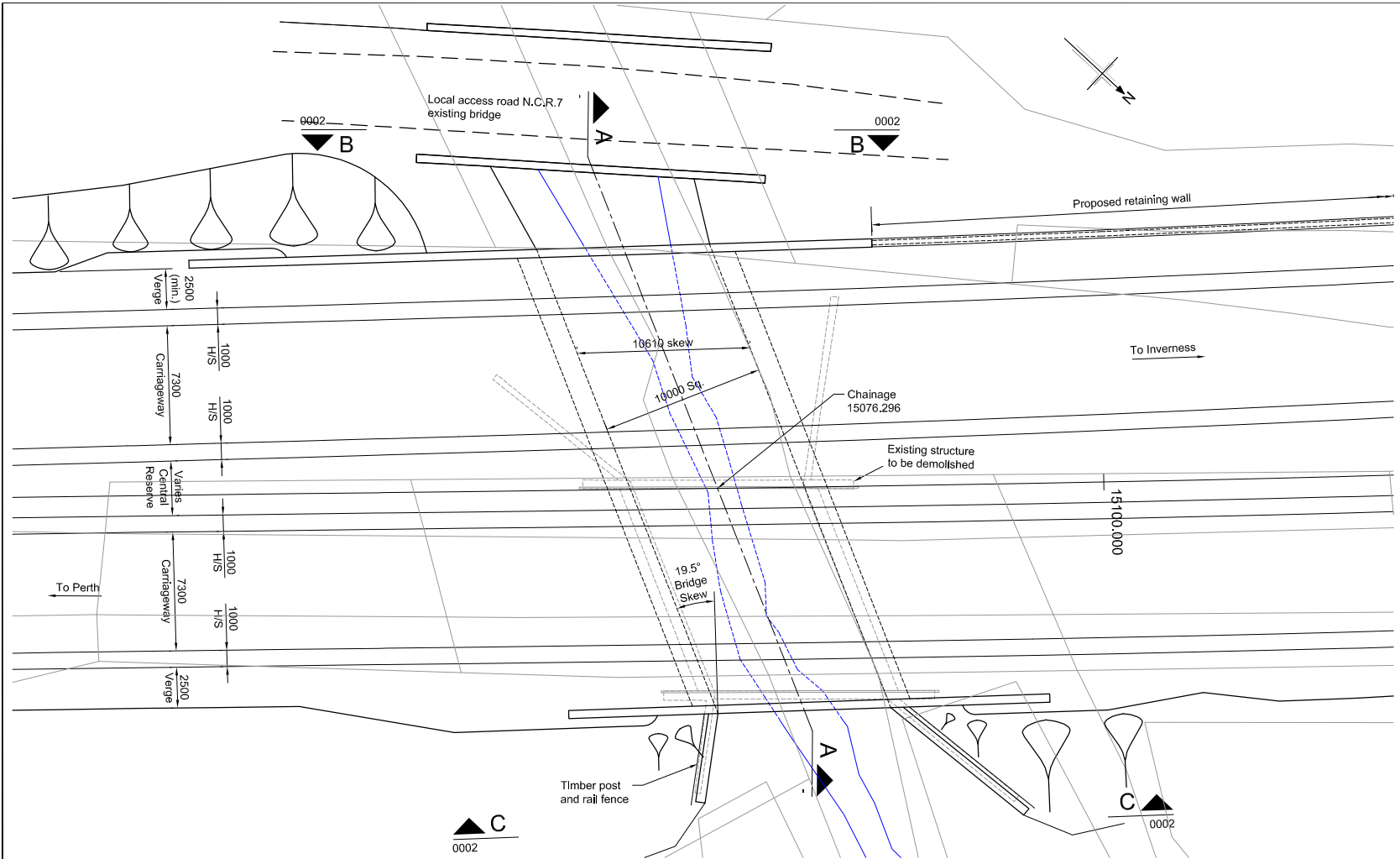
Drawing number  
**Figure A.11.8.45**

Rev  
**0**

File: I:\Glarif\07\PV01\ECBC\BWA\_Job\B2140005 A9 Dualling Temp folder\B2140005 Killiecrankie to Pitagowan\CAD\Watercourse Modifications\WF141.dwg Date: Aug 03, 2017 - 10:23am Plotted by: WOODJA

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- Notes.**
- All dimensions are in millimetres unless noted otherwise.
  - All levels are in metres Above Ordnance Datum.
  - All chainages are in metres.
  - All exposed arrises to have 25x25 chamfers unless noted otherwise.
  - Concrete finishes denoted thus:  
 (F) - Formed  
 (U) - Unformed
  - Concrete protection to be as follows:  
 (S) - Surface impregnation in accordance with BD43 of the DMRB.  
 (A) - Spray applied waterproofing in accordance with CI 2003 of the Specification.  
 (B) - Waterproofing of all buried concrete surfaces in accordance with CI 2004 of the Specification.
  - All details shown on this drawing are indicative only and subject to development.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:	
<b>CONSTRUCTION</b>	
<ul style="list-style-type: none"> <li>Service survey required pre-construction</li> <li>Potential presence in existing structure of harmful substances causing damage to health to be established pre-demolition</li> <li>Structure stability to be checked during break-out / demolition of existing structure by undertaking investigations</li> <li>Nature and position of the existing structure foundations to be verified pre-construction by undertaking investigations</li> <li>Condition of existing structure may not be as anticipated.</li> <li>Existing structure may not be accurately represented by record drawings.</li> <li>Position of existing structure may not be as shown</li> </ul>	
<b>MAINTENANCE / CLEANING</b>	
None	
<b>DECOMMISSIONING / DEMOLITION</b>	
None	
It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement	

P2	22/05/17	DMRB Stage 3 Report - Draft	MG	IA	MAM	ELM
P1	25/10/16	Design Flt 4 - Issued for Review	MG	IA	MAM	ELM
Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Appr'd



Drawing title  
**KILLIECRANKIE TO GLEN GARRY ALLT A'CHROMBAIDH UNDERBRIDGE GENERAL ARRANGEMENT**

Scale	AS SHOWN @ A1	DO NOT SCALE
Jacobs No.	B2140005	
Drawing number	<b>Figure A.11.8.46</b>	Rev P2

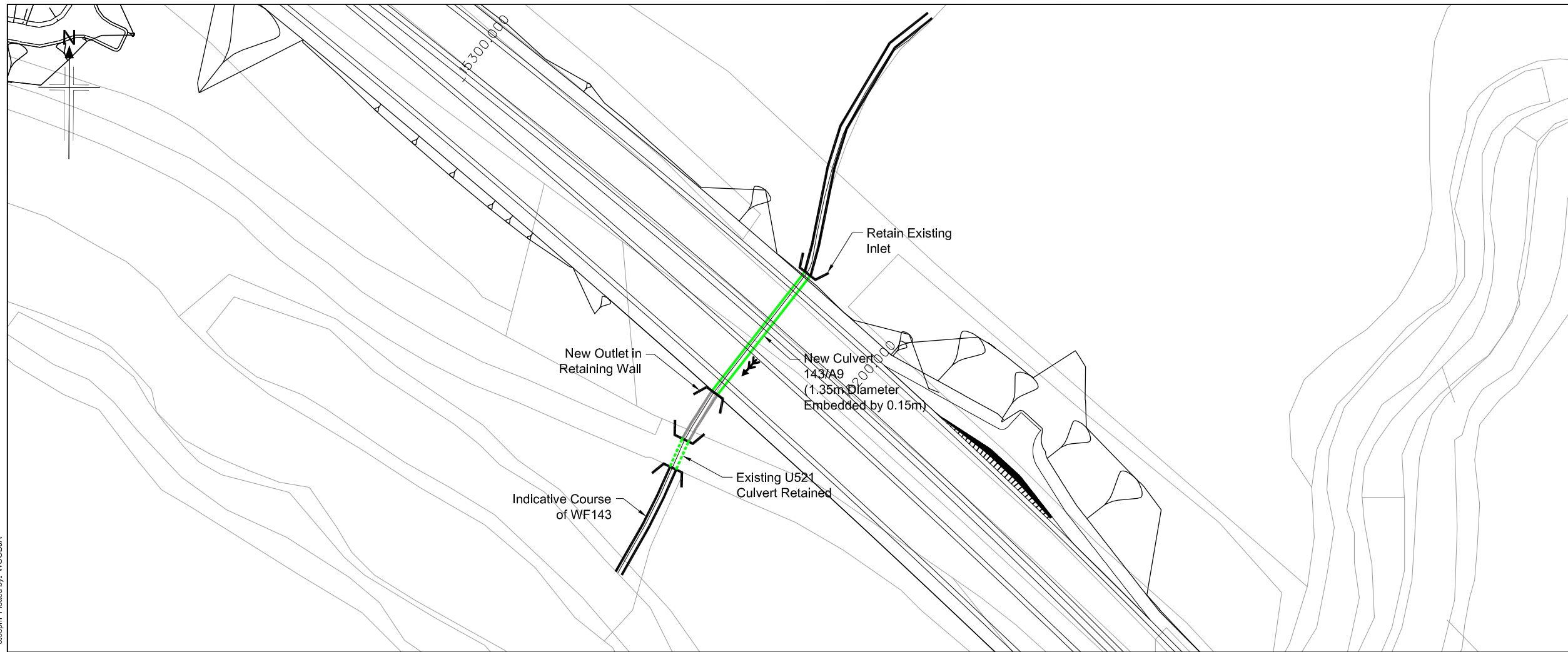
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**SECTION A-A**  
 SCALE 1:50

File: A:\B2140005\Killiecrankie to Pitagowan\CAD\Watercourse Modifications\A9P05-JAC-SBR-A\_ML151\_ST-M2-ST-0001 - Rev P2 - A9 720 Allt A'Chrombaidh.dwg Date: Nov 16, 2017 - 6:15pm Plotted by: WOODJJA

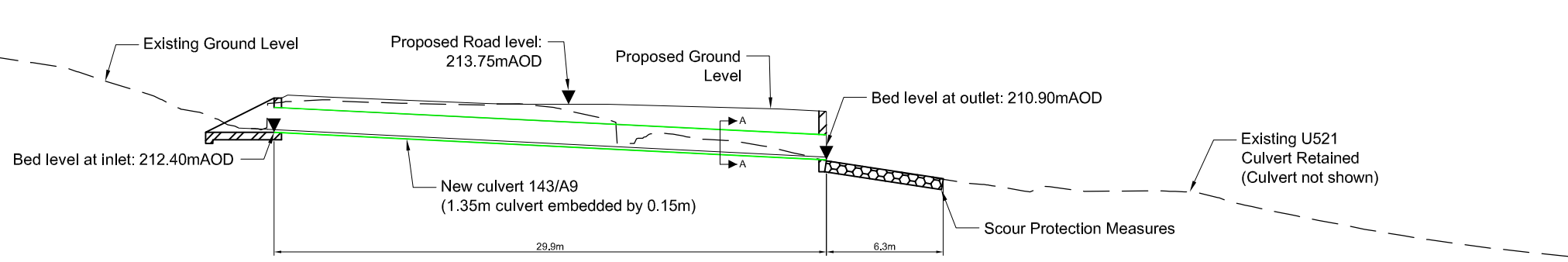
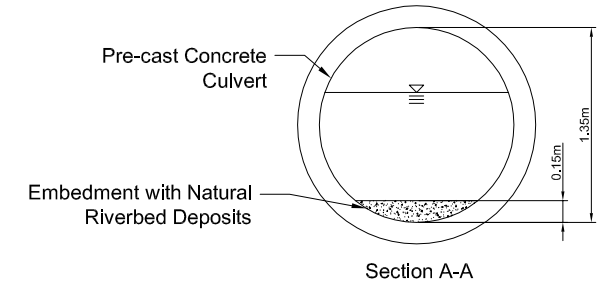




- Legend:**
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:**
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
  4. This drawing shall be read in conjunction with the 'Watercourse Crossing report' only and not in isolation.
  5. All 'new' and 'extended' culverts have been designed in accordance with the relevant provisions of DMRB.
  6. Where required 'scour protection measures' shall be provided within the zone indicated on the drawing. The nature and the extent of the scour protection measure will be further developed at detailed design stage in accordance with the relevant provisions of DMRB, taking into account flow hydraulics, channel geometry and channel morphology.
  7. Where shown culverts shall be 'embedded' with natural river deposits to the depth shown.
  8. Where shown 'cascades' are required to safely convey the design flood event (0.5% AEP (200-year) plus allowance for climate change). The cascade geometry shown on the drawing is indicative only and will be subject to further development at detailed design stage. The nature of the cascade will take one of the following forms:
    - Bedrock channel cascade,
    - Natural cascade with natural gravels, cobbles and rock forming individual steps,
    - Concrete cascade with stone pitching.
 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

**SCHEMATIC PLAN**



**WATERCOURSE 143 LONGSECTION**

Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Apprv'd
0	17/01/17	FOR INFORMATION	CON	JW	LMcG	



Drawing title:  
**KILLIECRANKIE TO GLEN GARRY  
PROPOSED MODIFICATIONS  
TO CULVERT ON  
WATERCOURSE WF143**

Drawing status: **FOR INFORMATION**

Scale: **NTS @ A1** **DO NOT SCALE**

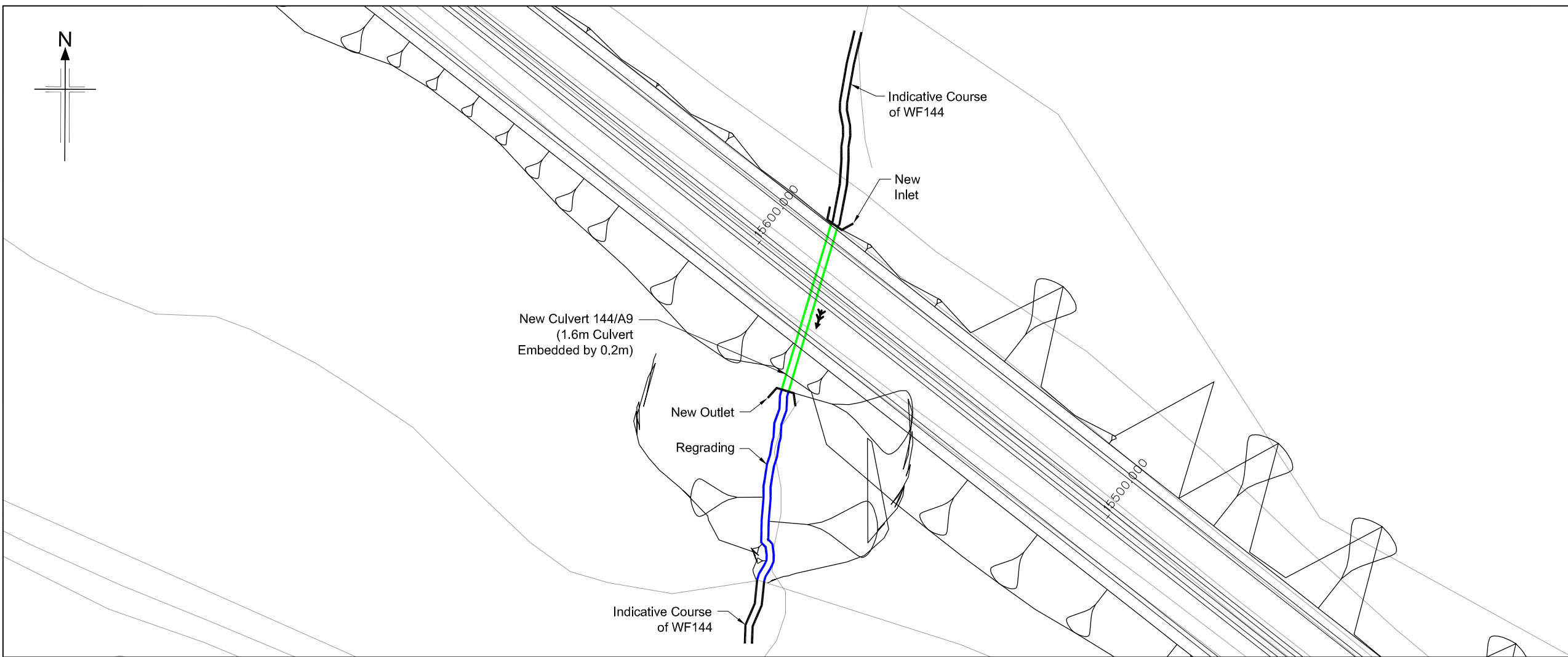
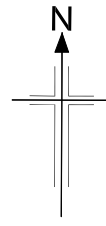
Jacobs No. **B2140005**

Drawing number: **Figure A.11.8.47**

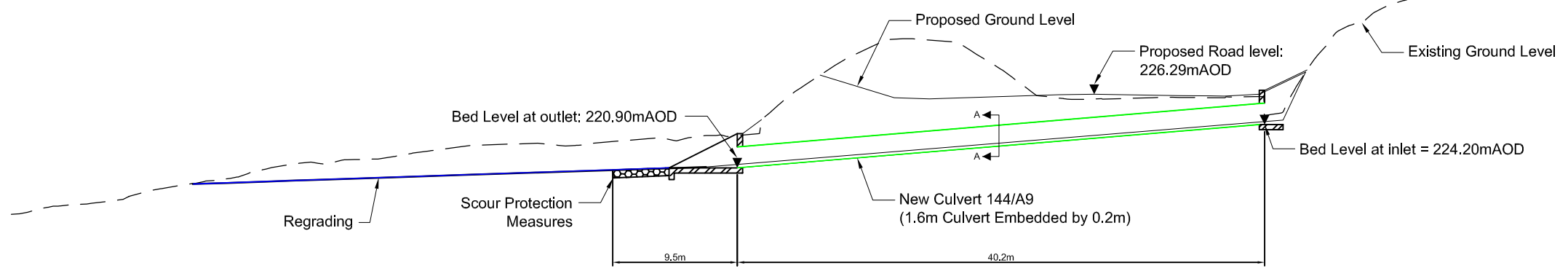
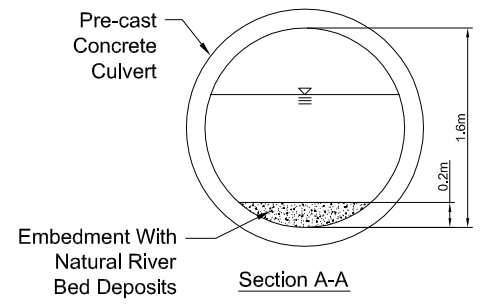
Rev: **0**

File: \\Gla0107\PROJ\1\EC\BWA\_Jobs\B2140005\_A9 Dualling Temp folder\B2140005\_A9 Dualling CAD\Watercourse Modifications\WF143.dwg Date: Aug 16, 2017 - 3:33pm Plotted by: WOODUA  
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**SCHEMATIC PLAN**



**WATERCOURSE 144 LONGSECTION**

**Legend:**

- New culvert/extension
- - - Retained culvert
- Realigned/regraded channel
- Cascade
- Inlet/outlet headwall (new)
- Inlet/outlet headwall (retained)
- Pre-earthworks drain and outfall
- Access chamber
- Flow direction
- IL

- Notes:**
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
  4. This drawing shall be read in conjunction with the 'Watercourse Crossing report' only and not in isolation.
  5. All 'new' and 'extended' culverts have been designed in accordance with the relevant provisions of DMRB.
  6. Where required 'scour protection measures' shall be provided within the zone indicated on the drawing. The nature and the extent of the scour protection measure will be further developed at detailed design stage in accordance with the relevant provisions of DMRB, taking into account flow hydraulics, channel geometry and channel morphology.
  7. Where shown culverts shall be 'embedded' with natural river deposits to the depth shown.
  8. Where shown 'cascades' are required to safely convey the design flood event (0.5% AEP (200-year) plus allowance for climate change). The cascade geometry shown on the drawing is indicative only and will be subject to further development at detailed design stage. The nature of the cascade will take one of the following forms,
    - Bedrock channel cascade.
    - Natural cascade with natural gravels, cobbles and rock forming individual steps.
    - Concrete cascade with stone pitching.
 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

D	17/01/17	FOR INFORMATION	CON	JW	LMG	
Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Apprv'd



**KILLIECRANKIE TO GLEN GARRY  
PROPOSED MODIFICATIONS  
TO CULVERT ON  
WATERCOURSE WF144**

Drawing status: **FOR INFORMATION**

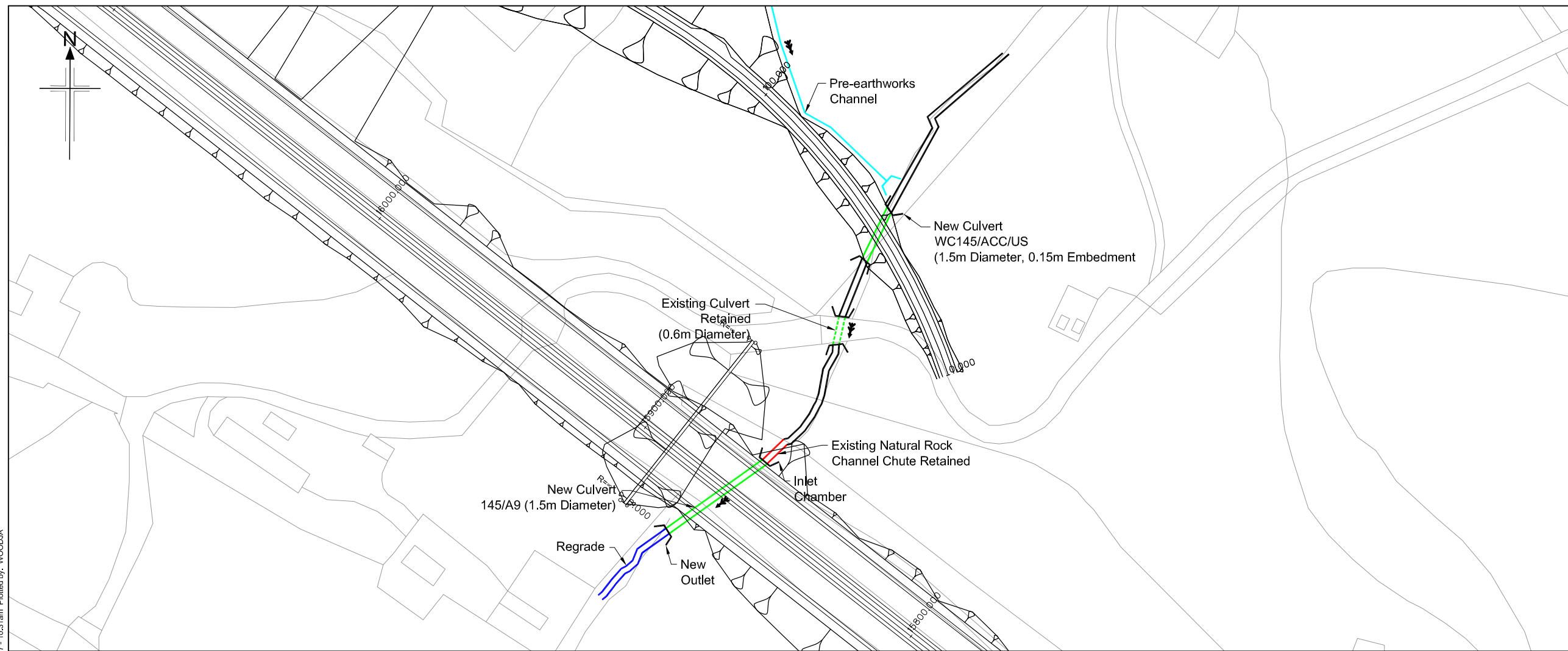
Scale	NTS @ A1	DO NOT SCALE
Jacobs No.	B2140005	

Drawing number: **Figure A.11.8.48** Rev: **0**

File: I:\Glen\07\PV01\ECBC\BWA\_Joos\B2140005 A9 Dualing Temp folder\B2140005 Killiecrankie to Pitagowan\CAD\Watercourse Modifications\WF144.dwg Date: Aug 03, 2017 - 10:30am Plotted by: WOODJA

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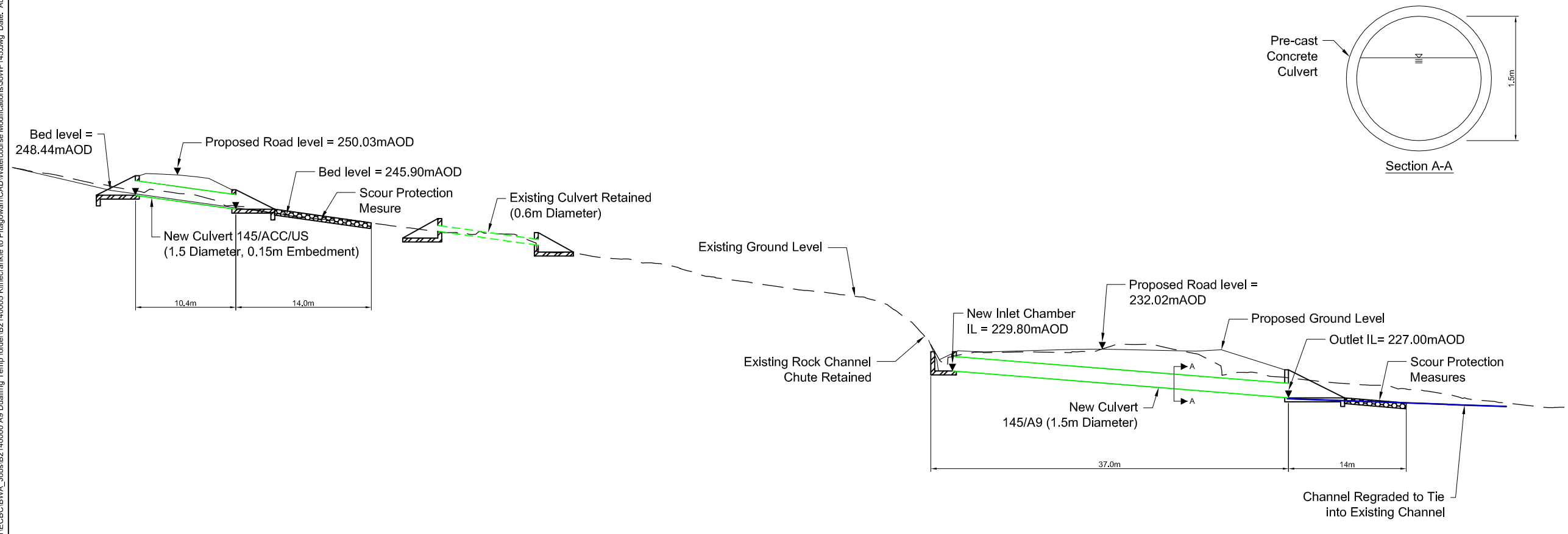


SCHEMATIC PLAN

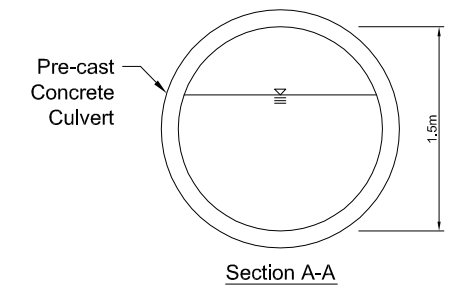
- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
  4. This drawing shall be read in conjunction with the 'Watercourse Crossing report' only and not in isolation.
  5. All 'new' and 'extended' culverts have been designed in accordance with the relevant provisions of DMRB.
  6. Where required 'scour protection measures' shall be provided within the zone indicated on the drawing. The nature and the extent of the scour protection measure will be further developed at detailed design stage in accordance with the relevant provisions of DMRB, taking into account flow hydraulics, channel geometry and channel morphology.
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 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

File: I:\Glarif\07\10\11\ECBC\BWA\_Job\B2140000 A9 Dualling Temp folder\B2140000 A9 Dualling Modifications\DWG\WF145.dwg Date: Aug 03, 2017 - 10:31 am Plotted by: WOODJA



WATERCOURSE 145 LONGSECTION



Rev	Rev. Date	Purpose of revision	Drawn	Checkd	Rev'd	Apprv'd
0	17/01/17	FOR INFORMATION				

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Drawing title  
**KILLIECRANKIE TO GLEN GARRY PROPOSED MODIFICATIONS TO CULVERT ON WATERCOURSE WF145**

Drawing status  
**FOR INFORMATION**

Scale  
 NTS @ A1 DO NOT SCALE

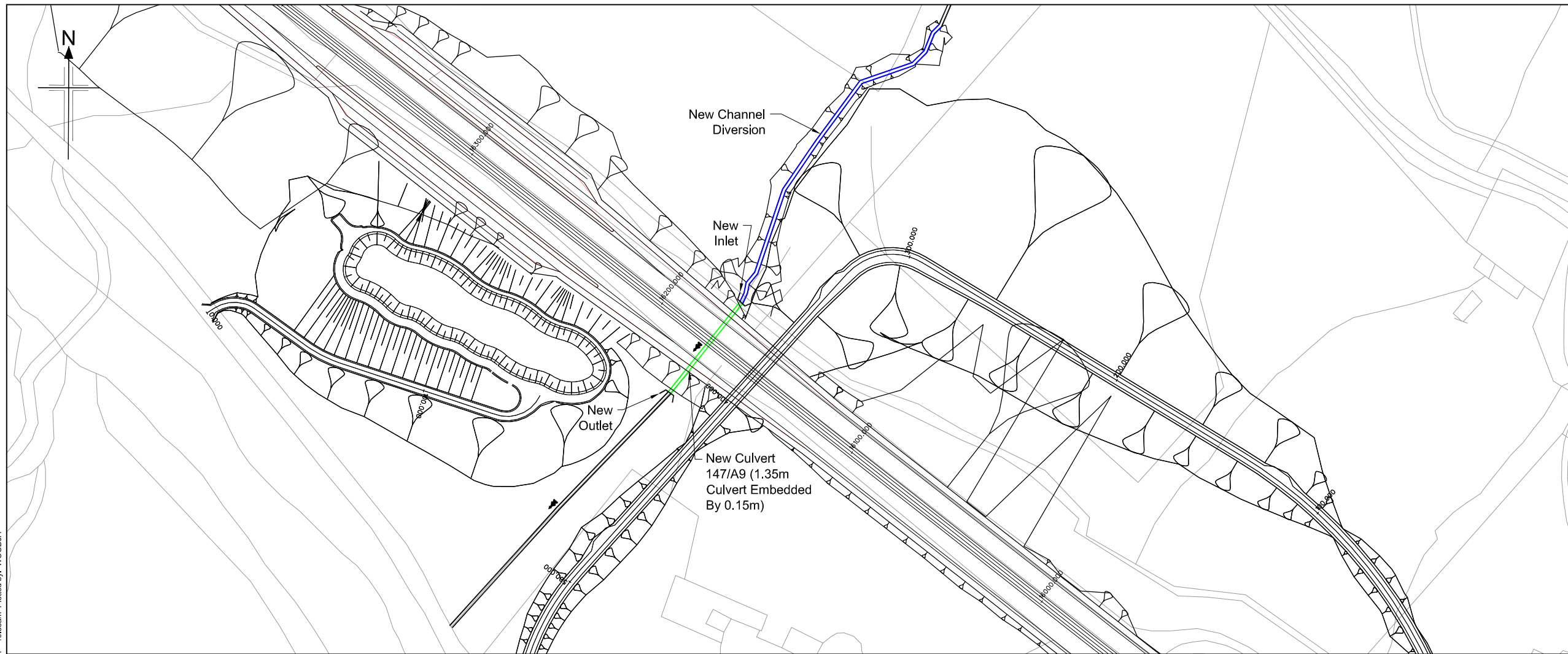
Jacobs No.  
 B2140005

Drawing number  
**Figure A.11.8.49**

Rev  
**0**

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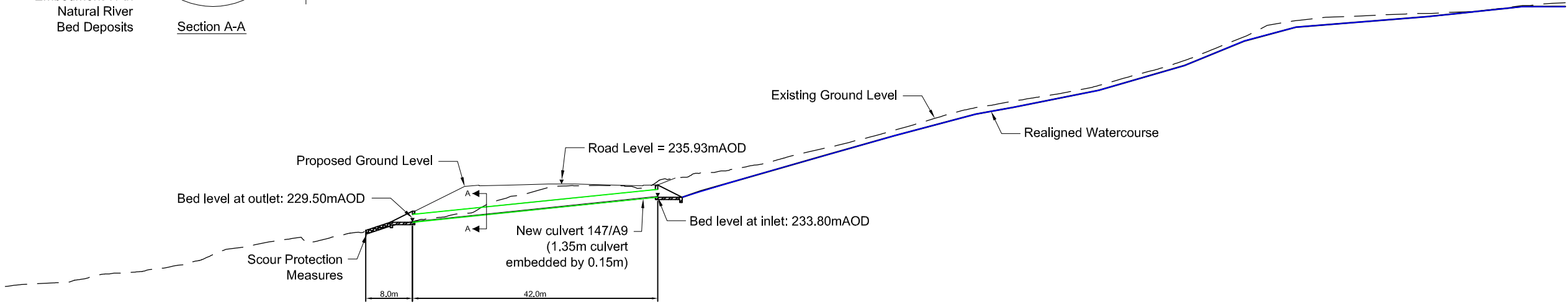
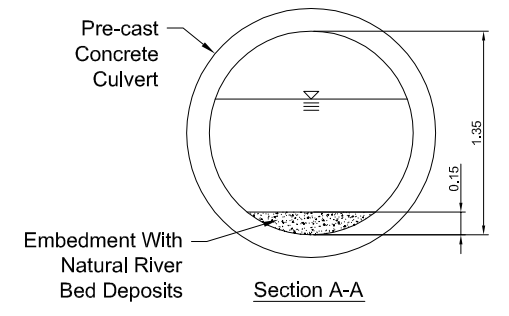
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- Legend:**
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL** Invert Level

- Notes:**
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
  4. This drawing shall be read in conjunction with the 'Watercourse Crossing report' only and not in isolation.
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  6. Where required 'scour protection measures' shall be provided within the zone indicated on the drawing. The nature and the extent of the scour protection measure will be further developed at detailed design stage in accordance with the relevant provisions of DMRB, taking into account flow hydraulics, channel geometry and channel morphology.
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    - Concrete cascade with stone pitching.
 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

**SCHEMATIC PLAN**



**WATERCOURSE 147 LONGSECTION**

Rev	Rev. Date	Purpose of revision	Drawn	Checkd	Rev'd	Apprv'd
0	17/01/17	FOR INFORMATION				



**KILLIECRANKIE TO GLEN GARRY  
PROPOSED MODIFICATIONS  
TO CULVERT ON  
WATERCOURSE WF147**

Drawing status: **FOR INFORMATION**

Scale: **NTS @ A1** | **DO NOT SCALE**

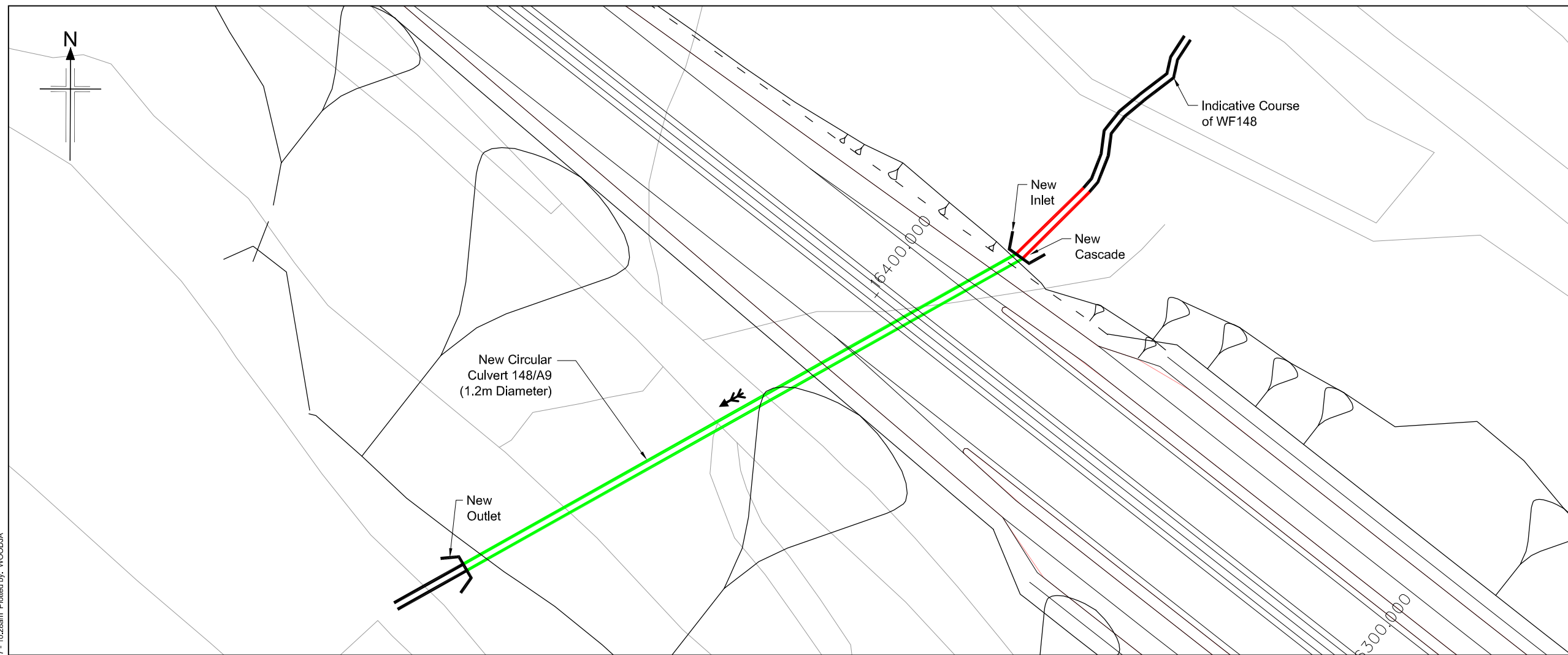
Jacobs No. **B2140005**

Drawing number: **Figure A.11.8.50** | Rev: **0**

File: I:\Glarif\07\PV01\ECBC\BWA\_Joos\B2140005 A9 Dualing Temp folder\B2140005 Killiecrankie to Pitagowan\CAD\Watercourse Modifications\WF147.dwg Date: Aug 03, 2017 - 10:53:33am Plotted by: WOODJIA

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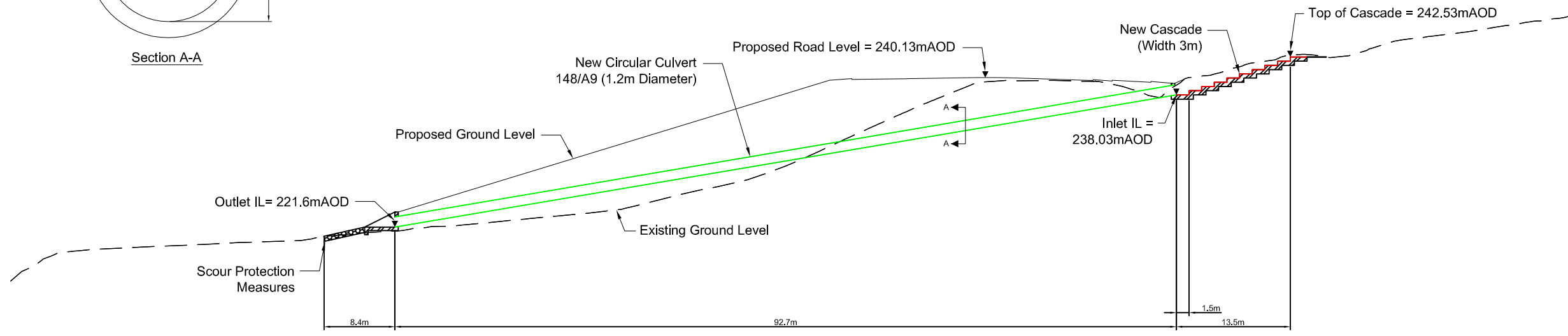
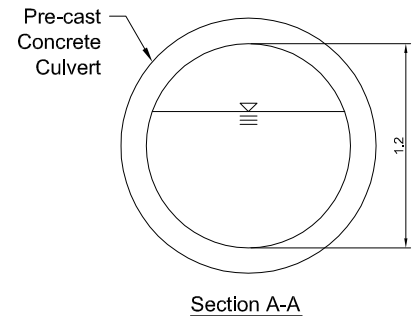
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- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - ← Flow direction
  - IL Invert Level

- Notes:
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
  4. This drawing shall be read in conjunction with the 'Watercourse Crossing report' only and not in isolation.
  5. All 'new' and 'extended' culverts have been designed in accordance with the relevant provisions of DMRB.
  6. Where required 'scour protection measures' shall be provided within the zone indicated on the drawing. The nature and the extent of the scour protection measure will be further developed at detailed design stage in accordance with the relevant provisions of DMRB, taking into account flow hydraulics, channel geometry and channel morphology.
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    - Concrete cascade with stone pitching.
 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

**SCHEMATIC PLAN**



**WATERCOURSE 148 LONGSECTION**

Rev	Rev. Date	Purpose of revision	Drawn	Checkd	Rev'd	Apprv'd
D	17/01/17	FOR INFORMATION				



Drawing title

**KILLIECRANKIE TO GLEN GARRY PROPOSED MODIFICATIONS TO CULVERT ON WATERCOURSE WF148**

Drawing status

**FOR INFORMATION**

Scale

NTS @ A1 DO NOT SCALE

Jacobs No. B2140005

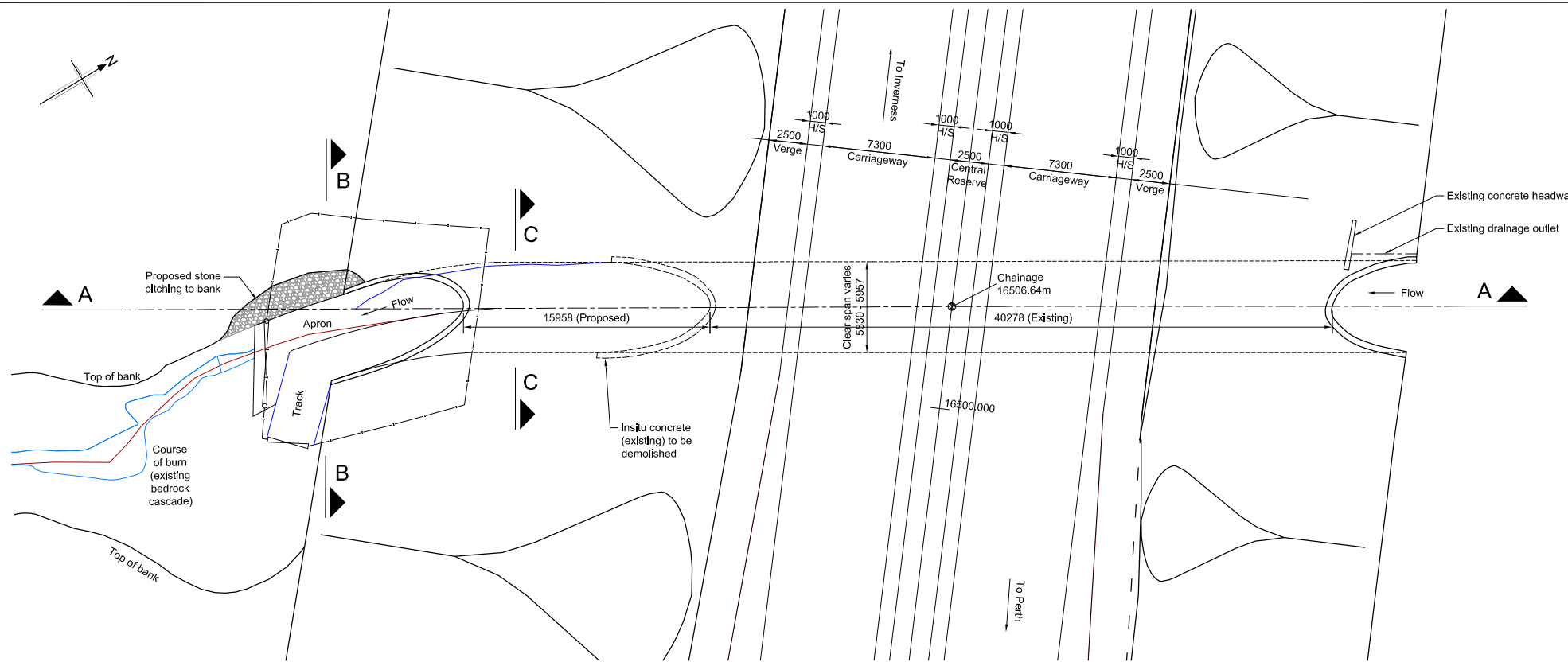
Drawing number

**Figure A.11.8.51**

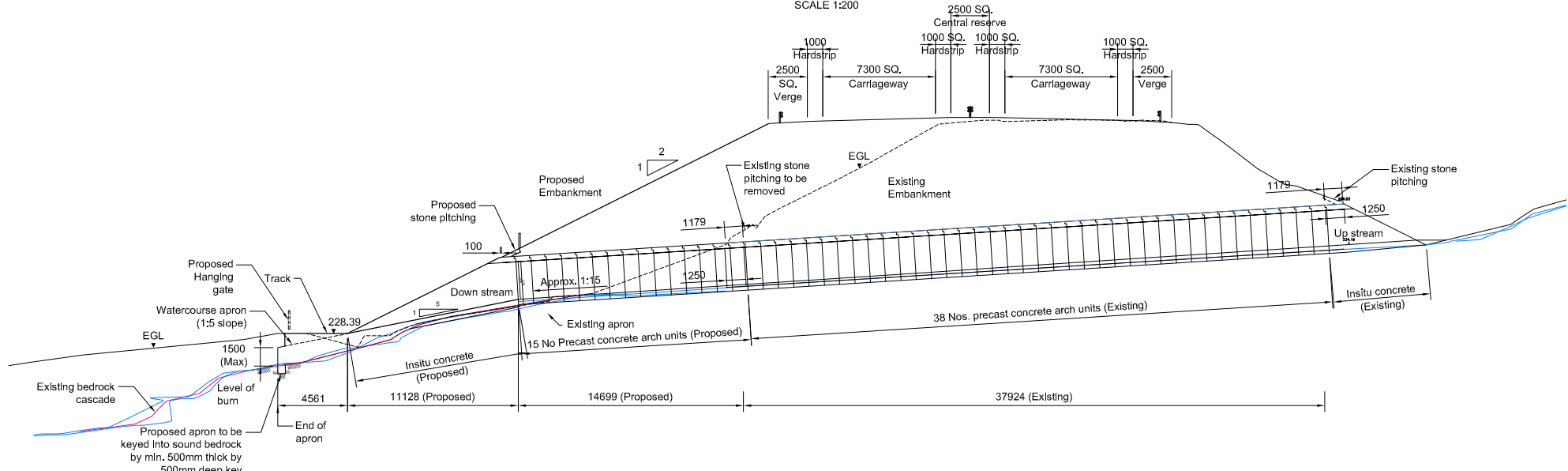
Rev

**0**

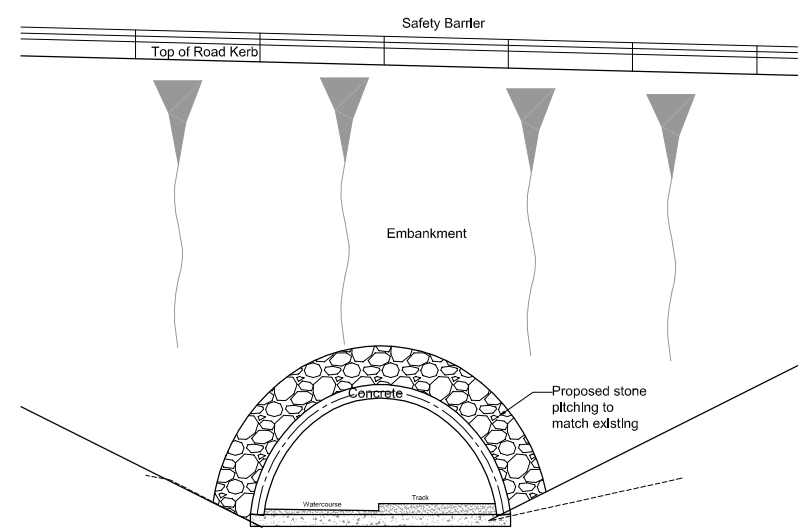
File: I:\Garriff\07\01\11\ECBC\BWA\_Jobs\B2140005 A9 Dualing Temp folder\B2140005 A9 Dualing Modifications\WF148.dwg Date: Aug 03, 2017 - 10:28am Plotted by: WOODJA



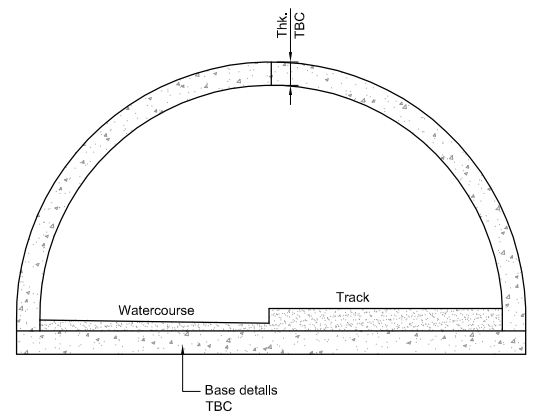
**PLAN**  
SCALE 1:200



**SECTION A-A**  
SCALE 1:200



**ELEVATION B-B**  
SCALE 1 : 100



**SECTION C-C**  
SCALE 1 : 50

- Notes.**
- All dimensions are in millimetres unless noted otherwise.
  - All levels are in metres Above Ordnance Datum.
  - All chainages are in metres.
  - All exposed arrises to have 25x25 chamfers unless noted otherwise.
  - Concrete finishes denoted thus:  
 (F) - Formed  
 (U) - Unformed
  - Concrete protection to be as follows:  
 (S) - Surface impregnation in accordance with BD43 of the DMRB.  
 (A) - Spray applied waterproofing in accordance with CI 2003 of the Specification.  
 (B) - Waterproofing of all buried concrete surfaces in accordance with CI 2004 of the Specification.
  - All details shown on this drawing are indicative only and subject to development.
  - Bedrock levels TBC. Should bedrock be determined in excess of 150mm below proposed apron levels, additional intermediate steps shall be introduced to lower watercourse incrementally to existing channel.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:	
<b>CONSTRUCTION</b>	
<ul style="list-style-type: none"> <li>Service survey required pre-construction</li> <li>Structure stability to be checked during and after break-out / partial demolition of existing structure</li> <li>Nature and position of the existing structure foundations to be verified pre-construction by undertaking investigations</li> <li>Position of structure may not be as shown</li> </ul>	
<b>MAINTENANCE / CLEANING</b>	
None	
<b>DECOMMISSIONING / DEMOLITION</b>	
None	
It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement	

Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Appr'd
P2	18/05/17	DMRB Stage 3 Report - Draft	MG	IA	MAM	ELM
P1	11/10/16	Design Fix 4 - Issued for Review	MG	IA	MAM	ELM

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**KILLIECRANKIE TO GLEN GARRY  
CLUNES BURN  
CULVERT  
GENERAL ARRANGEMENT**

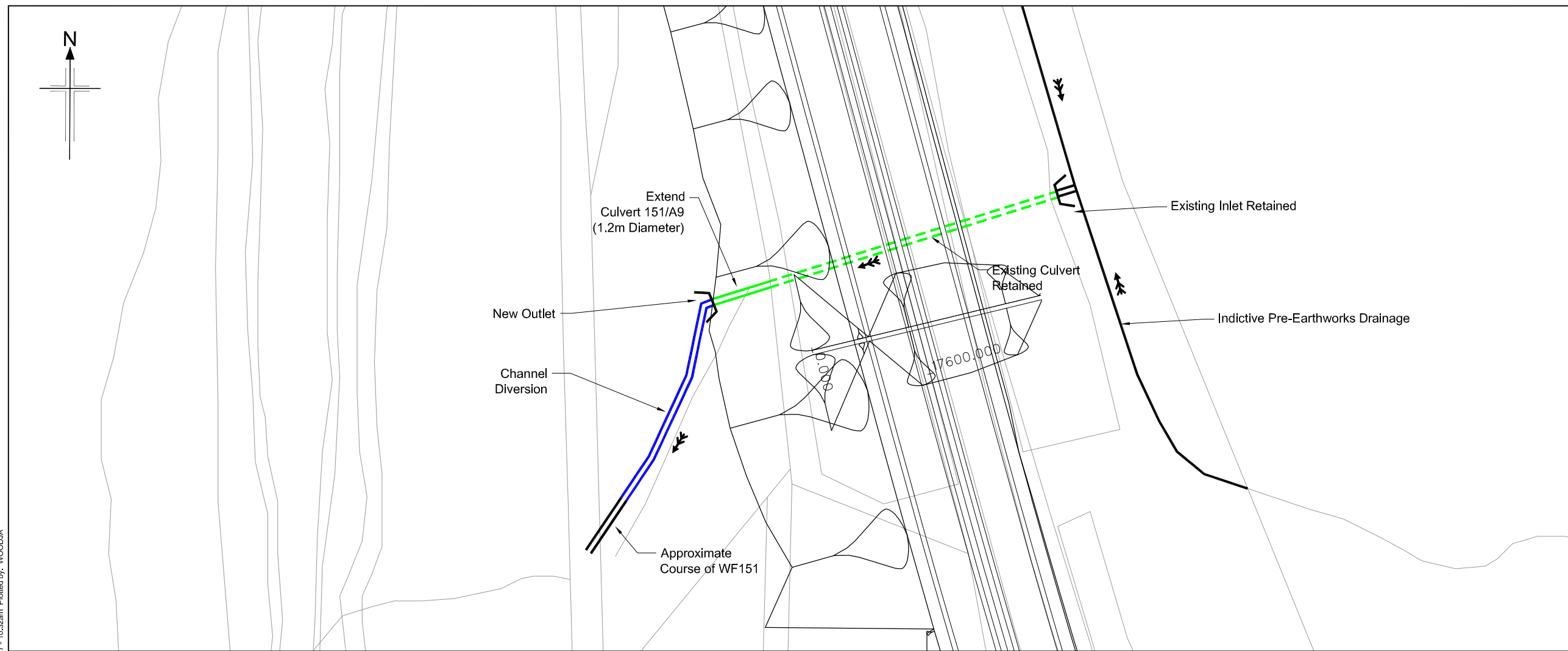
Scale	AS SHOWN @ A1	DO NOT SCALE
Jacobs No.	B2140005	

Drawing number **Figure A.11.8.52** Rev **P2**

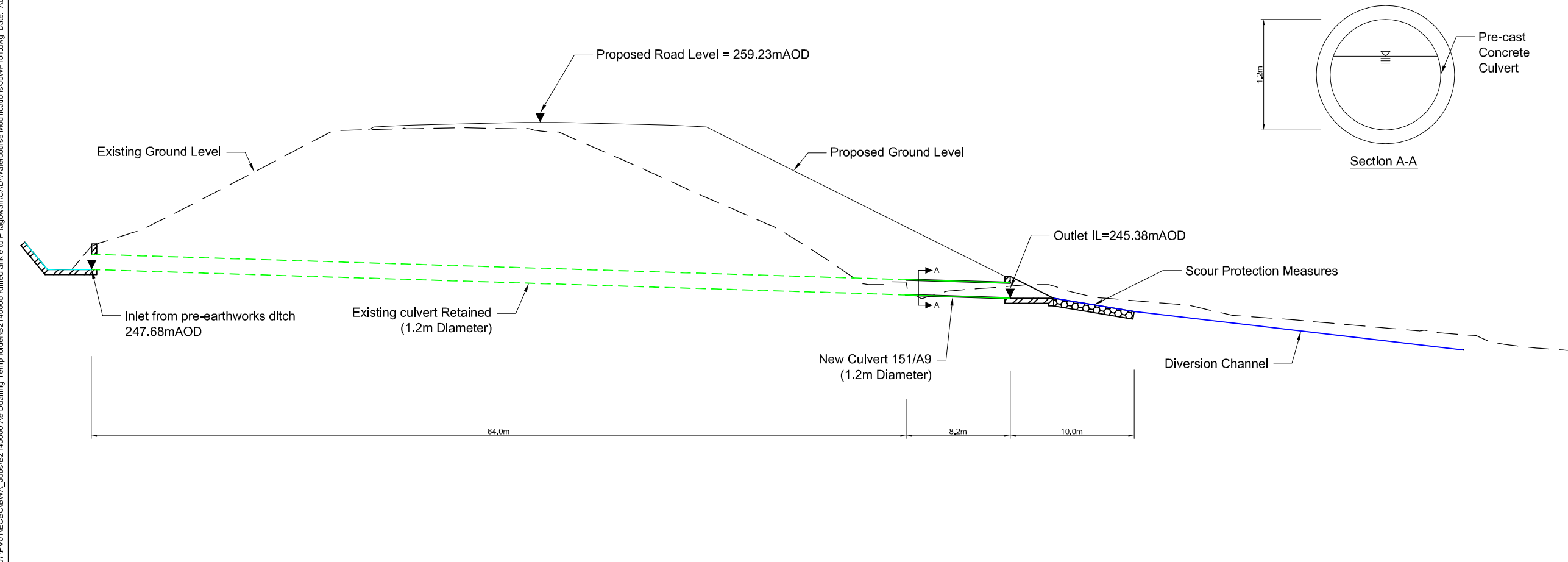
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

File: A:\B2140005\Killiecrankie to Pitagowan\CAD\Watercourse Modifications\A9PD5-JAC-SBR-A\_ML165\_ST-M2-ST-0001 Rev P2 - A9 730 Clunes Burn.dwg Date: Nov 16, 2017 - 6:14pm Plotted by: WOODJA

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SCHEMATIC PLAN



WATERCOURSE 151 LONGSECTION

- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - ← Flow direction
  - IL Invert Level

- Notes:
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
  4. This drawing shall be read in conjunction with the 'Watercourse Crossing report' only and not in isolation.
  5. All 'new' and 'extended' culverts have been designed in accordance with the relevant provisions of DMRB.
  6. Where required 'scour protection measures' shall be provided within the zone indicated on the drawing. The nature and the extent of the scour protection measure will be further developed at detailed design stage in accordance with the relevant provisions of DMRB, taking into account flow hydraulics, channel geometry and channel morphology.
  7. Where shown culverts shall be 'embedded' with natural river deposits to the depth shown.
  8. Where shown 'cascades' are required to safely convey the design flood event (0.5% AEP (200-year) plus allowance for climate change). The cascade geometry shown on the drawing is indicative only and will be subject to further development at detailed design stage. The nature of the cascade will take one of the following forms,
    - Bedrock channel cascade.
    - Natural cascade with natural gravels, cobbles and rock forming individual steps.
    - Concrete cascade with stone pitching.
 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

D	18/01/17	FOR INFORMATION	CON	JW	LMG	
Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Appr'd



Drawing title  
**KILLIECRANKIE TO GLEN GARRY PROPOSED MODIFICATIONS TO CULVERT ON WATERCOURSE WF151**

Drawing status  
**FOR INFORMATION**

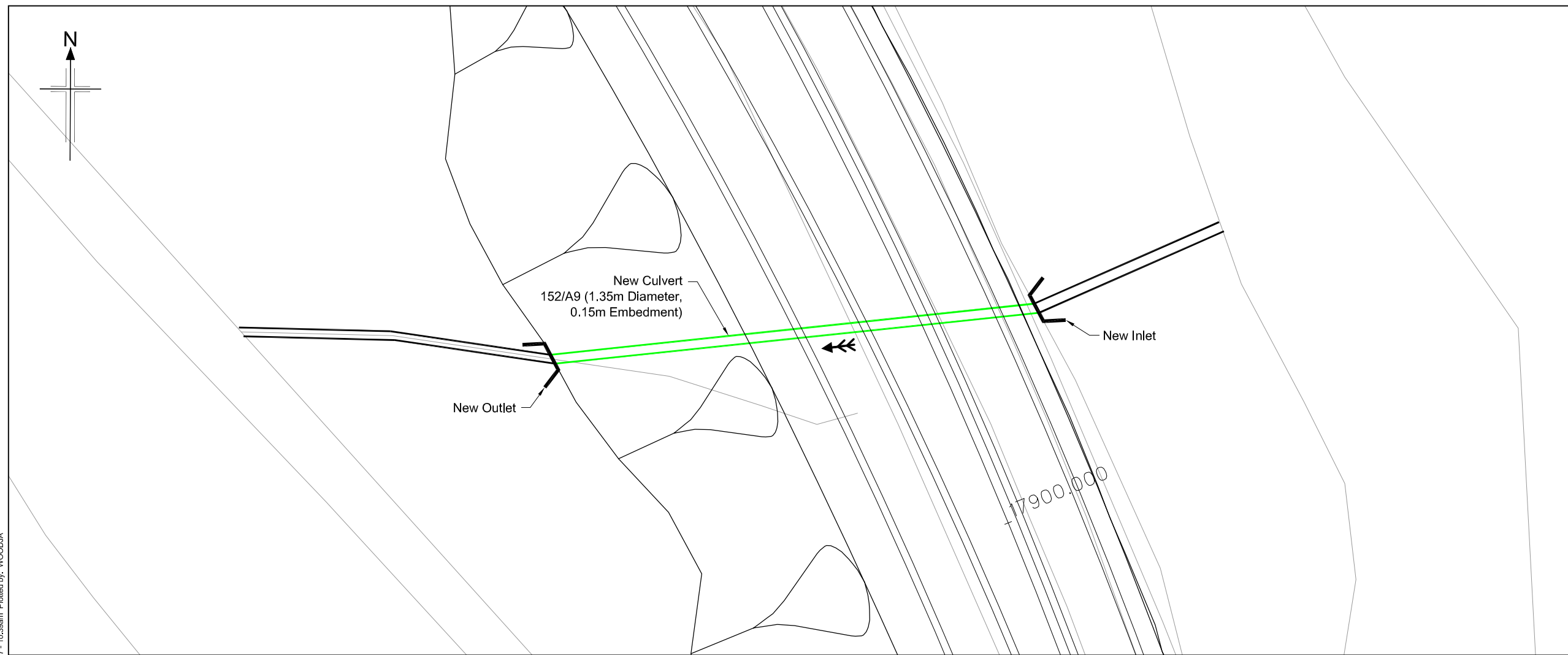
Scale  
 NTS @ A1      DO NOT SCALE

Jacobs No.      B2140005

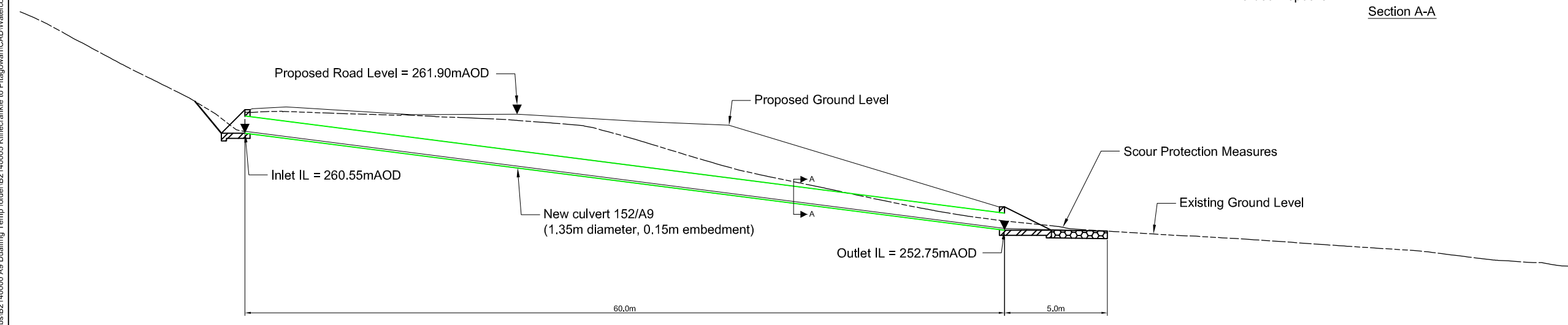
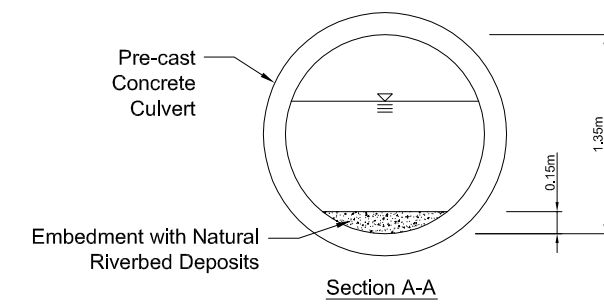
Drawing number      **Figure A.11.8.53**      Rev      **0**

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File: I:\Glarif\07\PV01\ECBC\BWA\_Jobs\B2140005 A9 Dualing Temp folder\B2140005 A9 Dualing CAD\Watercourse Modifications\WF151.dwg Date: Aug 03, 2017 - 10:32am Plotted by: WOODJA



SCHMATIC PLAN



WATERCOURSE 161 LONGSECTION

- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
  4. This drawing shall be read in conjunction with the 'Watercourse Crossing report' only and not in isolation.
  5. All 'new' and 'extended' culverts have been designed in accordance with the relevant provisions of DMRB.
  6. Where required 'scour protection measures' shall be provided within the zone indicated on the drawing. The nature and the extent of the scour protection measure will be further developed at detailed design stage in accordance with the relevant provisions of DMRB, taking into account flow hydraulics, channel geometry and channel morphology.
  7. Where shown culverts shall be 'embedded' with natural river deposits to the depth shown.
  8. Where shown 'cascades' are required to safely convey the design flood event (0.5% AEP (200-year) plus allowance for climate change). The cascade geometry shown on the drawing is indicative only and will be subject to further development at detailed design stage. The nature of the cascade will take one of the following forms,
    - Bedrock channel cascade.
    - Natural cascade with natural gravels, cobbles and rock forming individual steps.
    - Concrete cascade with stone pitching.
 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

D	18/01/17	FOR INFORMATION	CON	JW	LMG	
Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Apprv'd

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Drawing title  
**KILLIECRANKIE TO GLEN GARRY PROPOSED MODIFICATIONS TO CULVERT ON WATERCOURSE WF152**

Drawing status  
**FOR INFORMATION**

Scale  
 NTS @ A1 DO NOT SCALE

Jacobs No. B2140005

Drawing number  
**Figure A.11.8.54**

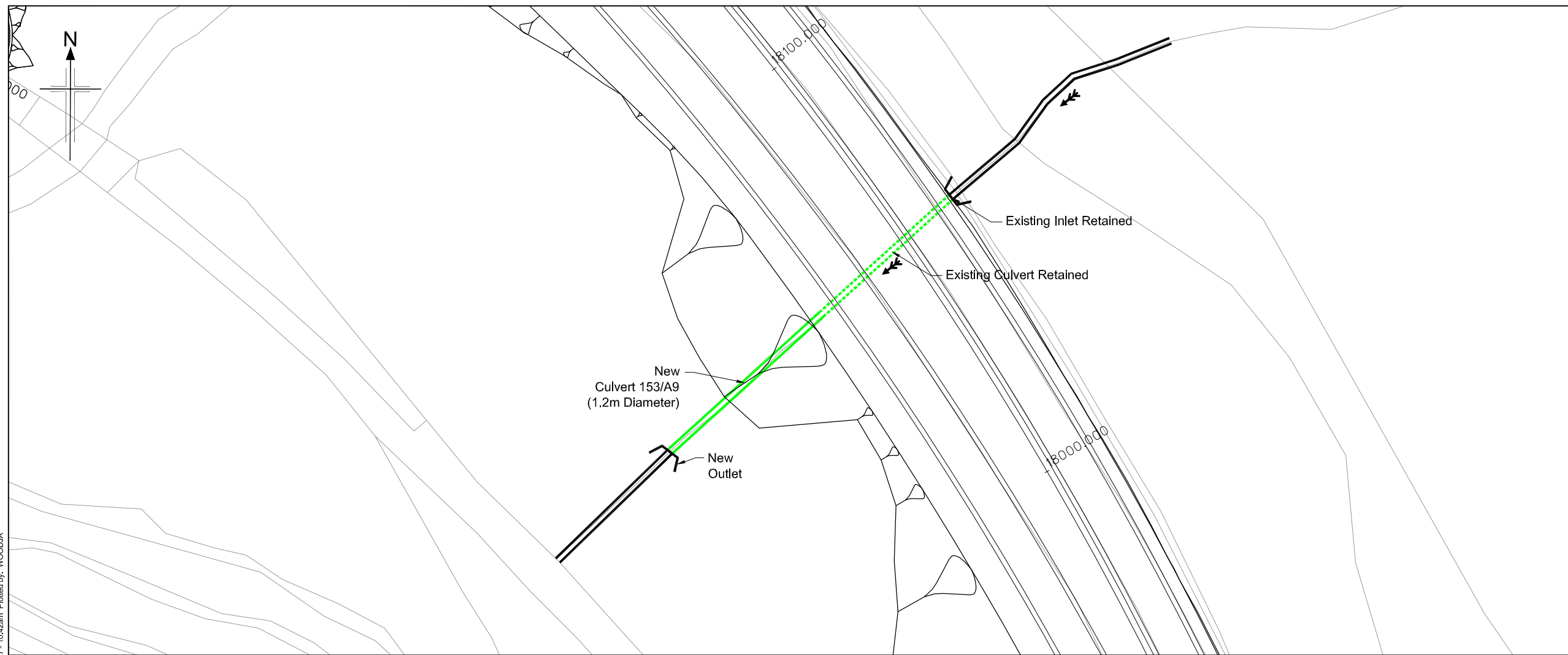
Rev  
**0**

File: I:\Glarif\07\PV01\ECBC\BWA\_Job\B2140000\_A9\_Dualling\_Temp\_folder\B2140005\_Killiecrankie to Pitegown\CAD\Watercourse Modifications\WF152.dwg Date: Aug 03, 2017 - 10:59am Plotted by: WOODJA

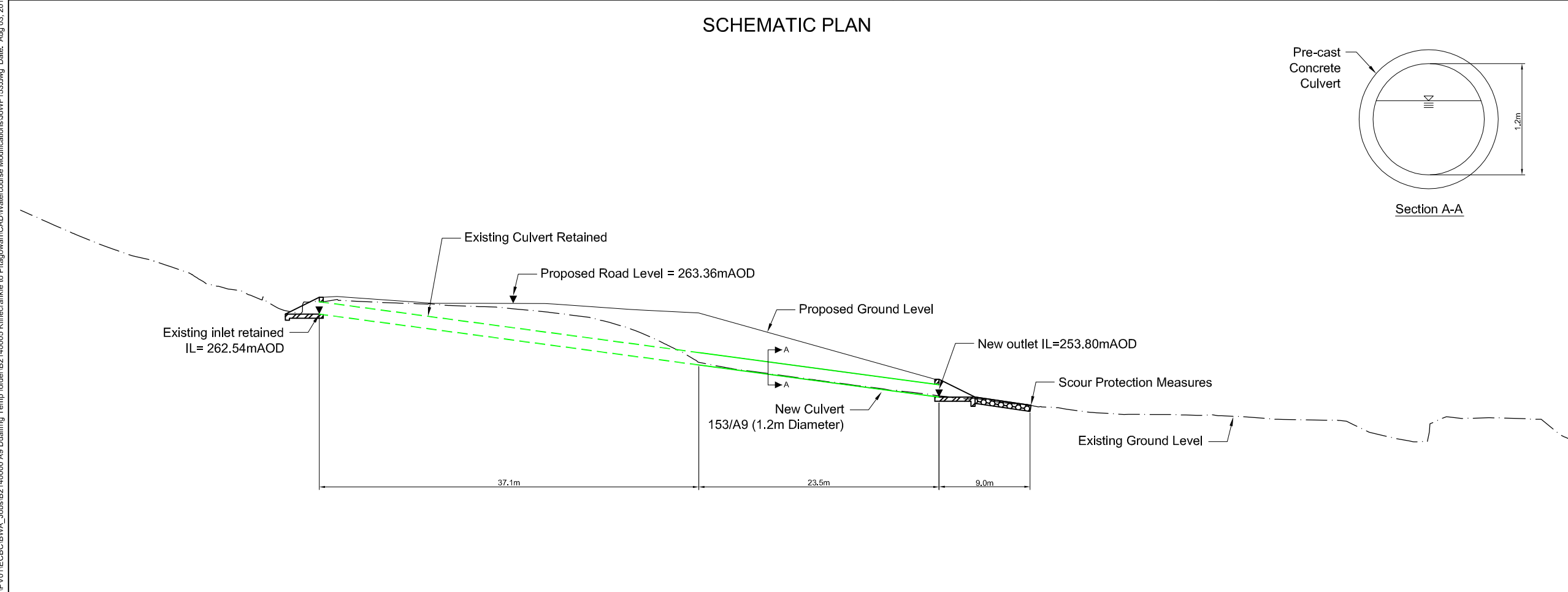
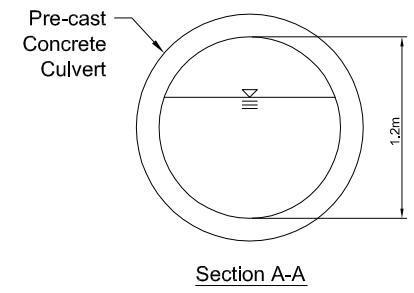
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SCHMATIC PLAN



WATERCOURSE 153 LONGSECTION

- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
  4. This drawing shall be read in conjunction with the 'Watercourse Crossing report' only and not in isolation.
  5. All 'new' and 'extended' culverts have been designed in accordance with the relevant provisions of DMRB.
  6. Where required 'scour protection measures' shall be provided within the zone indicated on the drawing. The nature and the extent of the scour protection measure will be further developed at detailed design stage in accordance with the relevant provisions of DMRB, taking into account flow hydraulics, channel geometry and channel morphology.
  7. Where shown culverts shall be 'embedded' with natural river deposits to the depth shown.
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    - Concrete cascade with stone pitching.
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  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

D	18/01/17	FOR INFORMATION	CON	JW	LMG	
Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Apprv'd

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Drawing title  
**KILLIECRANKIE TO GLEN GARRY  
 PROPOSED MODIFICATIONS  
 TO CULVERT ON  
 WATERCOURSE WF153**

Drawing status  
**FOR INFORMATION**

Scale  
 NTS @ A1 DO NOT SCALE

Jacobs No. B2140005

Drawing number  
**Figure A.11.8.55**

Rev  
**0**

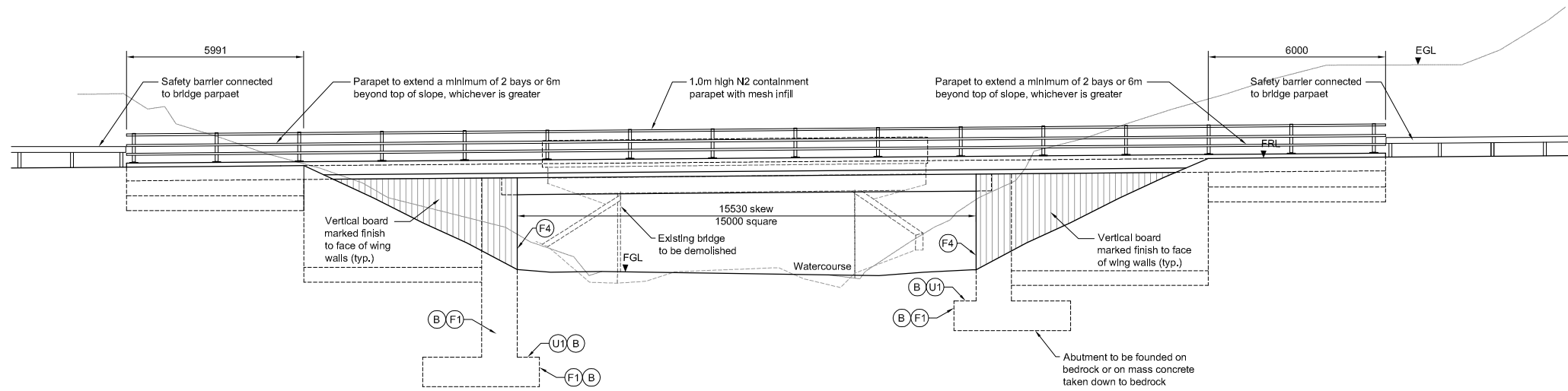
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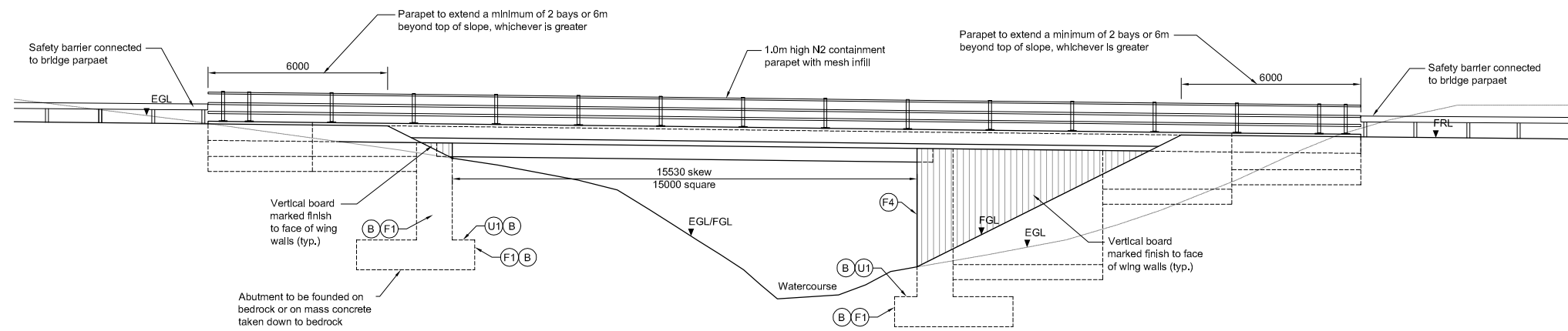
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Notes.

- For Notes see Drawing No. A9P05-JAC-SBR-A\_ML182\_ST-DR-ST-0001



**ELEVATION A-A**  
SCALE 1:100



**ELEVATION C-C**  
SCALE 1:100

P2	18/05/17	DMRB Stage 3 Report - Draft	MG	IA	MAM	ELM
P1	18/10/16	Design Flt 4 - Issued for Review	MG	IA	MAM	ELM
Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Appr'd



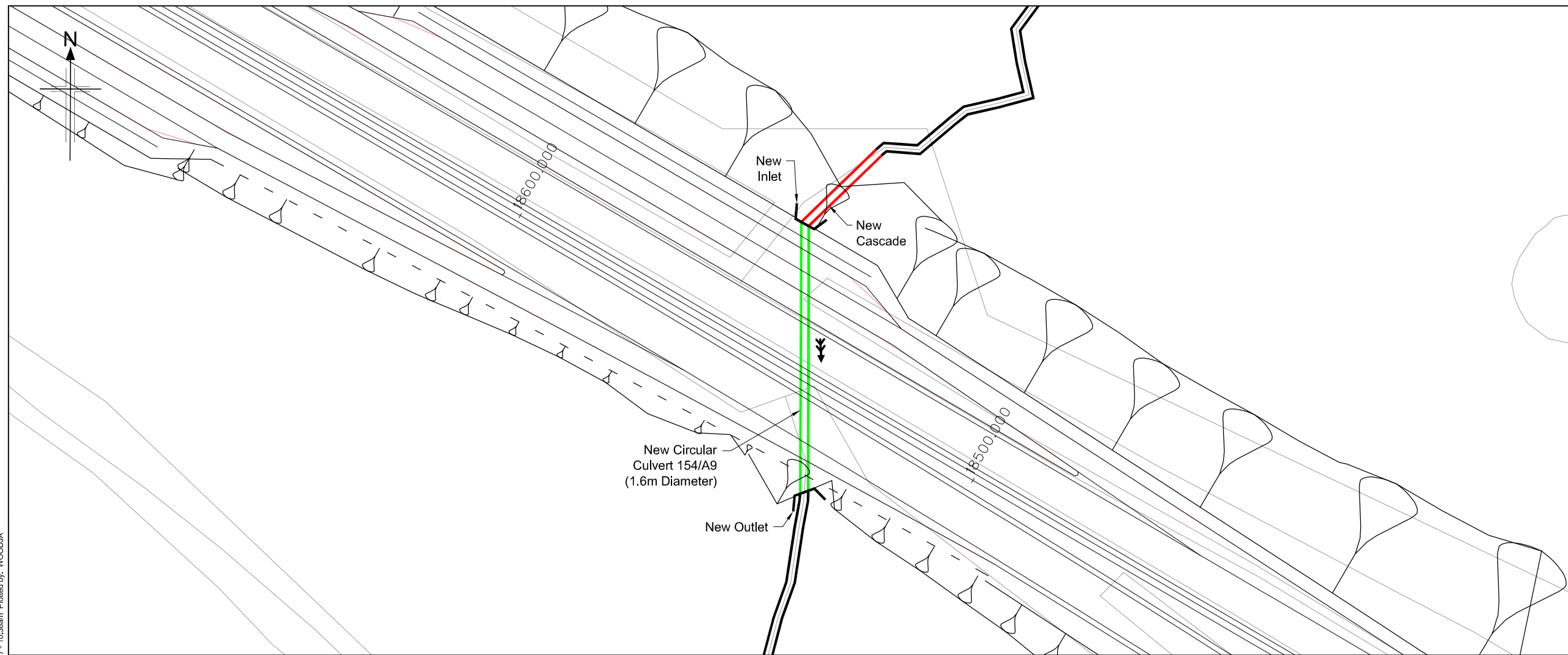
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Drawing title		
<b>KILLIECRANKIE TO GLEN GARRY ALLT CROM BHRUTHAICH UNDERBRIDGE GENERAL ARRANGEMENT</b>		
Drawing status		
Scale	AS SHOWN @ A1	DO NOT SCALE
Jacobs No.	B2140005	
Drawing number	<b>Figure A.11.8.56</b>	Rev
		P2
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SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:	
CONSTRUCTION	
<ul style="list-style-type: none"> <li>Service survey required pre-construction.</li> <li>Potential presence in existing structure of harmful substances causing damage to health to be established pre-demolition.</li> <li>Structure stability to be checked during break-out / demolition of existing structure</li> <li>Nature and position of the existing structure foundations to be verified pre-construction by undertaking investigations.</li> <li>Condition of existing structure may not be as anticipated.</li> <li>Existing structure may not be accurately represented by record drawings.</li> <li>Position of existing structure may not be as shown.</li> </ul>	
MAINTENANCE / CLEANING	
None	
DECOMMISSIONING / DEMOLITION	
None	
It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement	

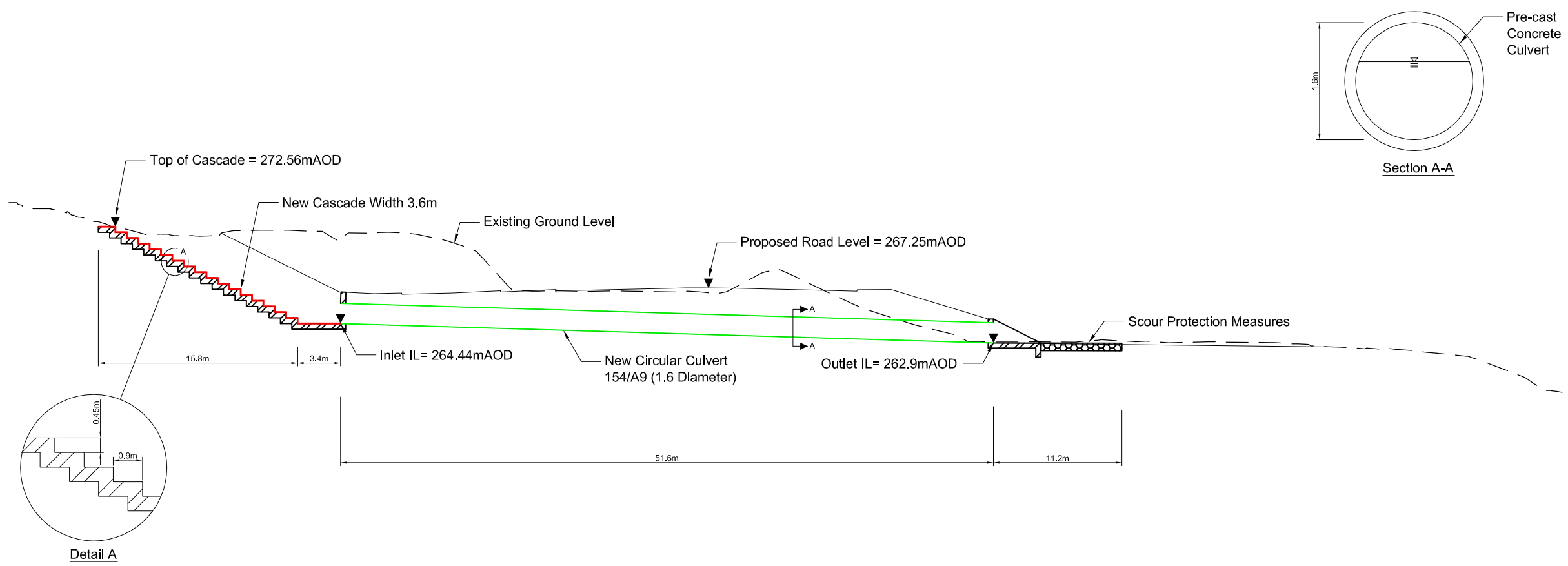
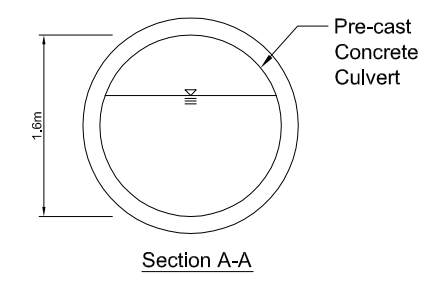
File: A:\B2140005 Killiecrankie to Pitagowan\CAD\Watercourse Modifications\A9P05-JAC-SBR-A\_ML182\_ST-M2-ST-0001 - Rev P2 - A9 740 Allt Crom Bhruthaich.dwg Date: Nov 16, 2017 - 6:13pm Plotted by: WOODJJA



- Legend:**
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:**
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
  4. This drawing shall be read in conjunction with the 'Watercourse Crossing report' only and not in isolation.
  5. All 'new' and 'extended' culverts have been designed in accordance with the relevant provisions of DMRB.
  6. Where required 'scour protection measures' shall be provided within the zone indicated on the drawing. The nature and the extent of the scour protection measure will be further developed at detailed design stage in accordance with the relevant provisions of DMRB, taking into account flow hydraulics, channel geometry and channel morphology.
  7. Where shown culverts shall be 'embedded' with natural river deposits to the depth shown.
  8. Where shown 'cascades' are required to safely convey the design flood event (0.5% AEP (200-year) plus allowance for climate change). The cascade geometry shown on the drawing is indicative only and will be subject to further development at detailed design stage. The nature of the cascade will take one of the following forms,
    - Bedrock channel cascade.
    - Natural cascade with natural gravels, cobbles and rock forming individual steps.
    - Concrete cascade with stone pitching.
 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

**SCHEMATIC PLAN**



**WATERCOURSE 154 LONGSECTION**

D	18/01/17	FOR INFORMATION	CON	JW	LMG	
Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Apprv'd



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**KILLIECRANKIE TO GLEN GARRY PROPOSED MODIFICATIONS TO CULVERT ON WATERCOURSE WF154**

Drawing status: **FOR INFORMATION**

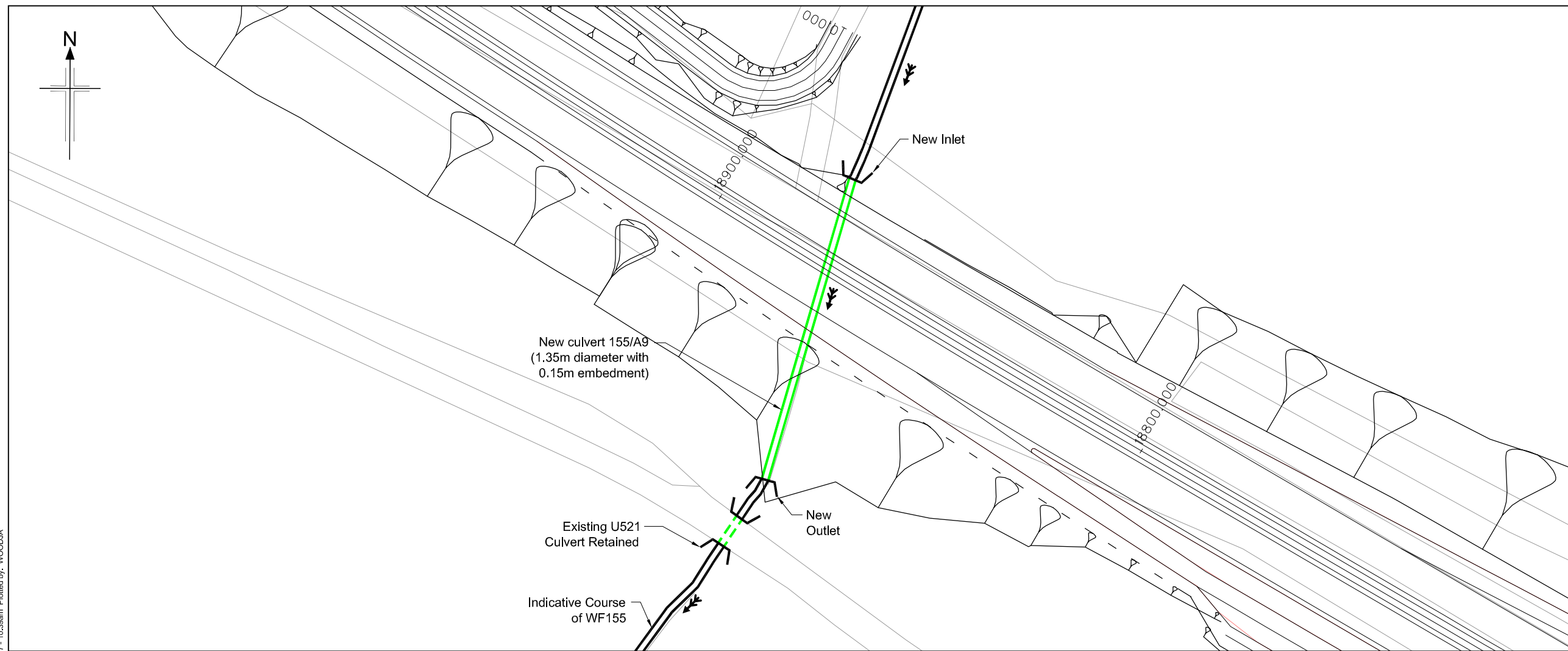
Scale: NTS @ A1 DO NOT SCALE

Jacobs No. B2140005

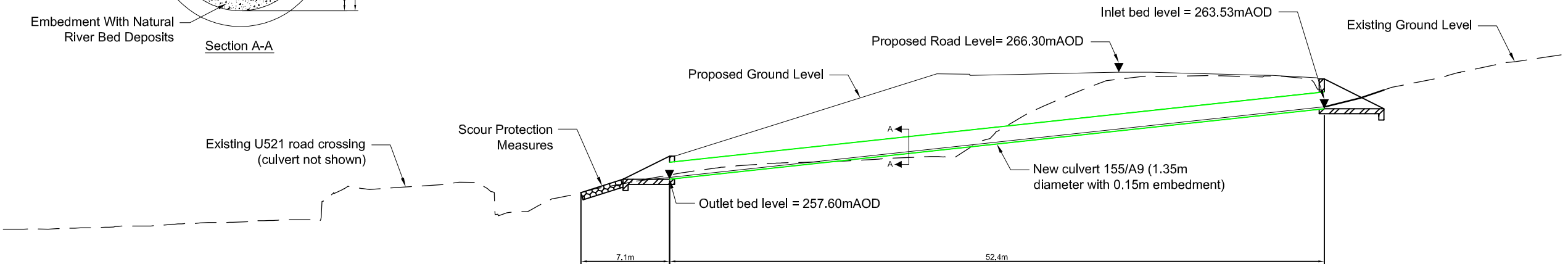
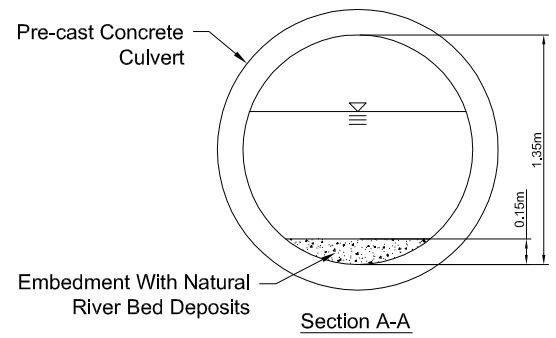
Drawing number: **Figure A.11.8.57** Rev: **0**

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File: I:\Glarif\07\PV01\ECBC\BWA\_Joos\B2140005 A9 Dualing Temp folder\B2140005 Killiecrankie to Pitagowan\CAD\Watercourse Modifications\WF154.dwg Date: Aug 03, 2017 - 10:38am Plotted by: WOODJA



**SCHEMATIC PLAN**



**WATERCOURSE 155 LONGSECTION**

- Legend:**
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL

- Notes:**
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
  4. This drawing shall be read in conjunction with the 'Watercourse Crossing report' only and not in isolation.
  5. All 'new' and 'extended' culverts have been designed in accordance with the relevant provisions of DMRB.
  6. Where required 'scour protection measures' shall be provided within the zone indicated on the drawing. The nature and the extent of the scour protection measure will be further developed at detailed design stage in accordance with the relevant provisions of DMRB, taking into account flow hydraulics, channel geometry and channel morphology.
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    - Natural cascade with natural gravels, cobbles and rock forming individual steps.
    - Concrete cascade with stone pitching.
 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

D	18/01/17	FOR INFORMATION	CON	JW	LMG	
Rev	Rev. Date	Purpose of revision	Drawn	Checkd	Rev'd	Apprv'd



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**Drawing title**  
 KILLIECRANKIE TO GLEN GARRY  
 PROPOSED MODIFICATIONS  
 TO CULVERT ON  
 WATERCOURSE WF155

**Drawing status**  
 FOR INFORMATION

Scale: NTS @ A1 DO NOT SCALE

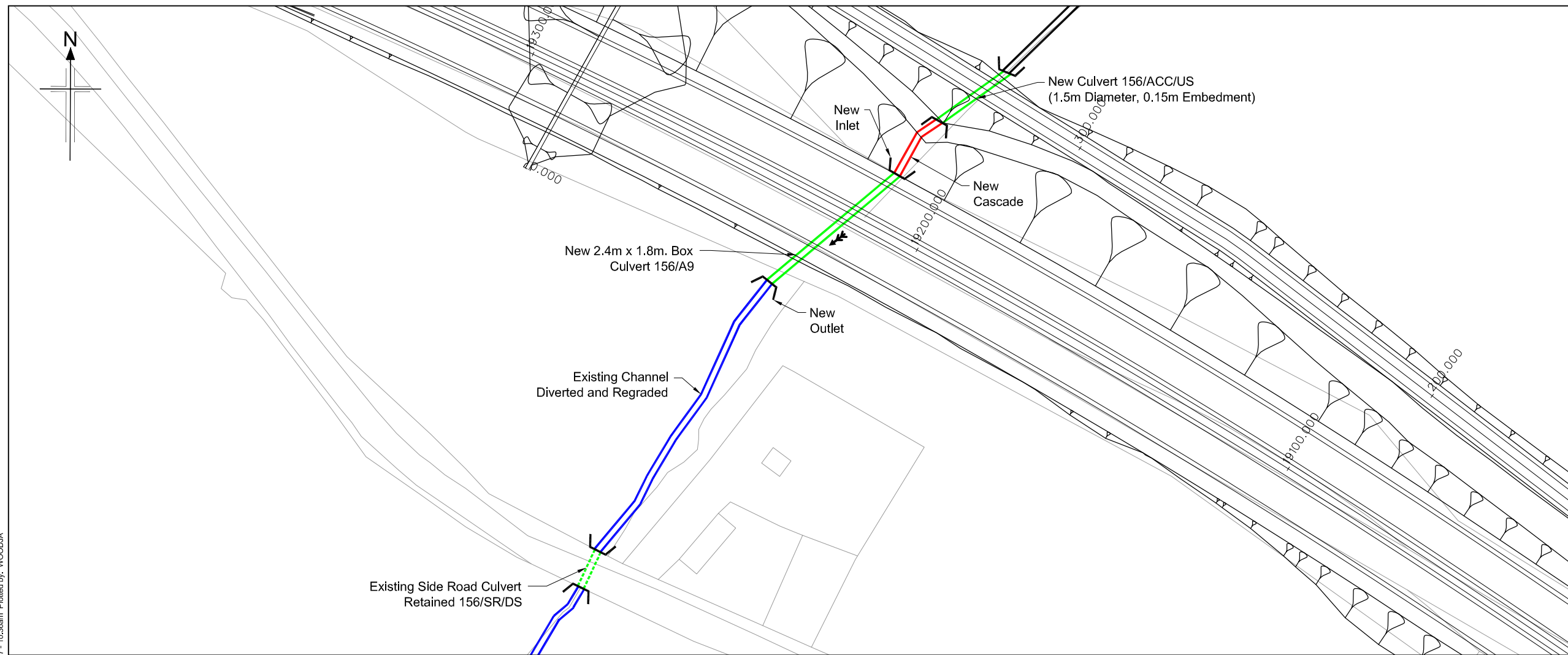
Jacobs No. B2140005

Drawing number: Figure A.11.8.58 Rev: 0

File: I:\Glarif\07\PV01\ECBC\BWA\_Jobs\B2140005 A9 Dualing Temp folder\B2140005 A9 Dualing Modifications\WF155.dwg Date: Aug 03, 2017 - 10:59am Plotted by: WOODJA

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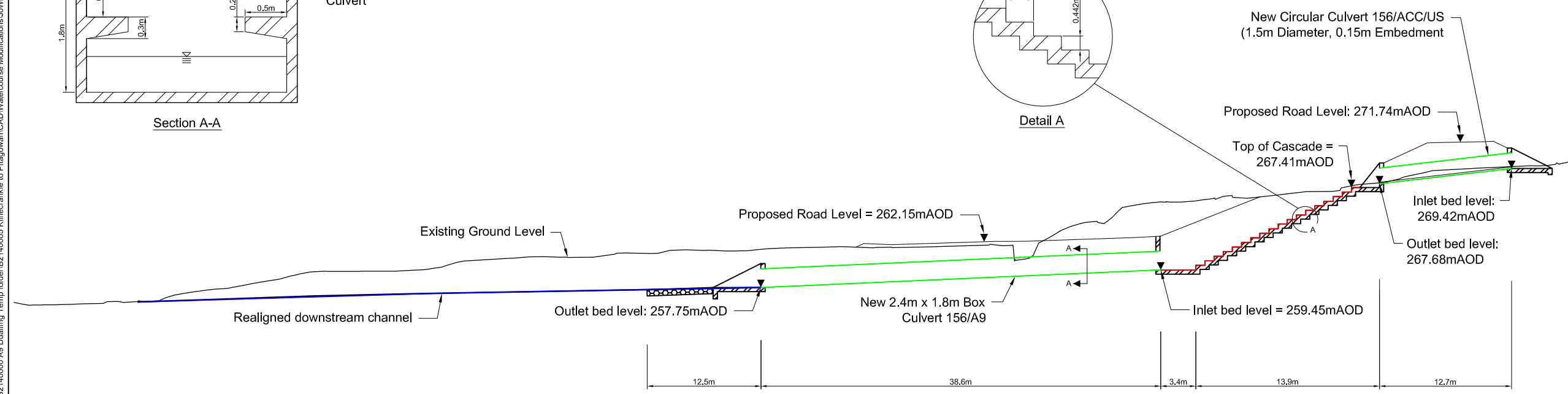
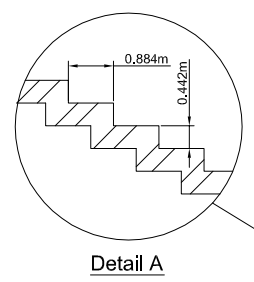
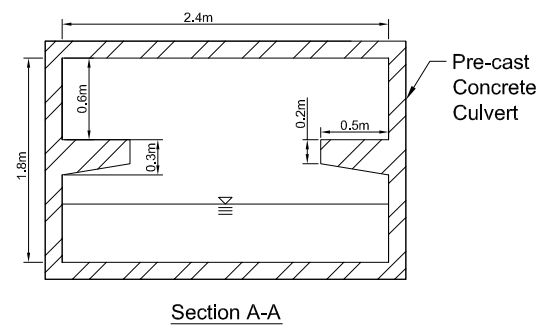
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- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
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**SCHEMATIC PLAN**



Rev	Rev. Date	Purpose of revision	Drawn	Checkd	Rev'd	Apprv'd
0	20/01/17	FOR INFORMATION	COM	JW	LMG	

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**KILLIECRANKIE TO GLEN GARRY PROPOSED MODIFICATIONS TO CULVERT ON WATERCOURSE WF156**

Drawing status: **FOR INFORMATION**

Scale: NTS @ A1 DO NOT SCALE

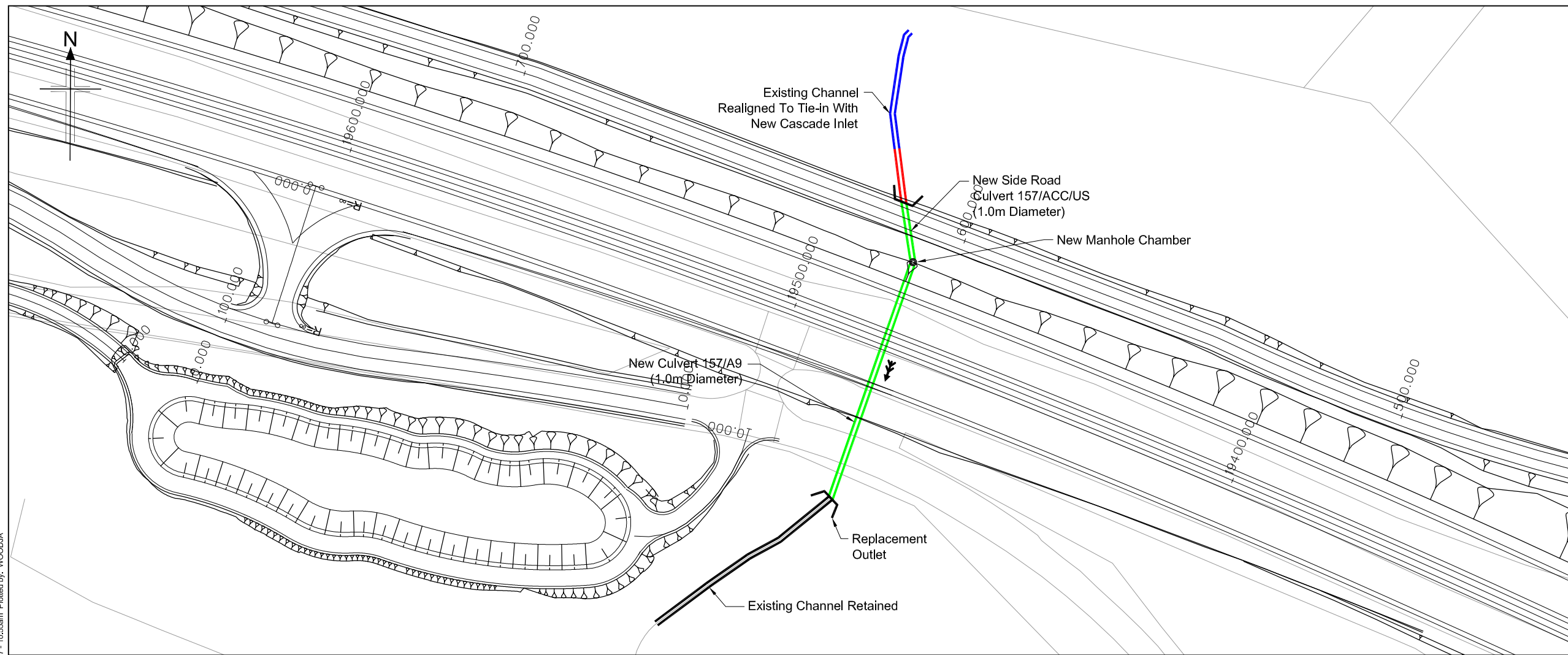
Jacobs No. B2140005

Drawing number: **Figure A.11.8.59** Rev: **0**

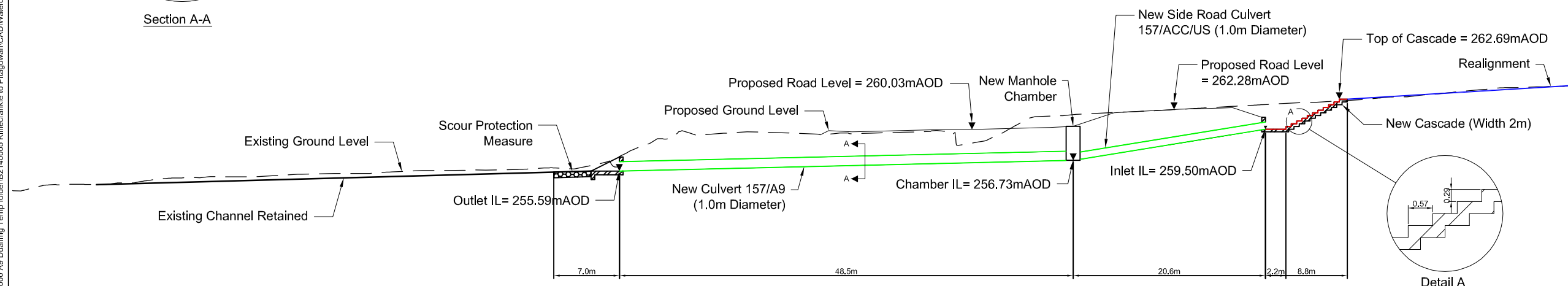
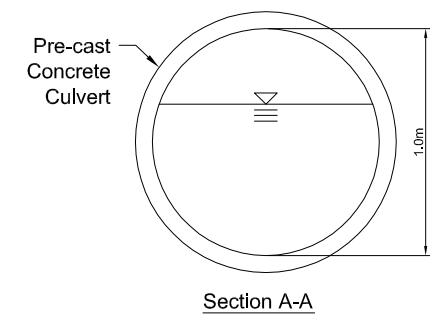
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**WATERCOURSE 156 LONGSECTION**

File: I:\Glarif\07\PV01\1ECBC\BWA\_Joos\B2140005\_Killiecrankie to Pitegowan\CAD\Watercourse Modifications\WF156.dwg Date: Aug 03, 2017 - 10:38am Plotted by: WOODJA



SCHEMATIC PLAN



WATERCOURSE 157 LONGSECTION

- Legend:
- New culvert/extension
  - - - Retained culvert
  - Realigned/regraded channel
  - Cascade
  - Inlet/outlet headwall (new)
  - - - Inlet/outlet headwall (retained)
  - Pre-earthworks drain and outfall
  - Access chamber
  - Flow direction
  - IL Invert Level

- Notes:
1. All dimensions are in meters unless noted otherwise.
  2. All levels are in meters above ordnance datum.
  3. All details shown on this drawing are indicative only and subject to development at detailed design.
  4. This drawing shall be read in conjunction with the 'Watercourse Crossing report' only and not in isolation.
  5. All 'new' and 'extended' culverts have been designed in accordance with the relevant provisions of DMRB.
  6. Where required 'scour protection measures' shall be provided within the zone indicated on the drawing. The nature and the extent of the scour protection measure will be further developed at detailed design stage in accordance with the relevant provisions of DMRB, taking into account flow hydraulics, channel geometry and channel morphology.
  7. Where shown culverts shall be 'embedded' with natural river deposits to the depth shown.
  8. Where shown 'cascades' are required to safely convey the design flood event (0.5% AEP (200-year) plus allowance for climate change). The cascade geometry shown on the drawing is indicative only and will be subject to further development at detailed design stage. The nature of the cascade will take one of the following forms,
    - Bedrock channel cascade.
    - Natural cascade with natural gravels, cobbles and rock forming individual steps.
    - Concrete cascade with stone pitching.
 The nature of the cascade will be determined at the detailed design stage taking into account hydraulic requirements, topography and nature of the underlying strata and its susceptibility to fluvial erosion.
  9. Where shown mammal ledges will be provided within the culvert in accordance with the relevant provisions of DMRB.

Rev	Rev. Date	Purpose of revision	Drawn	Checkd	Rev'd	Apprv'd
0	18/01/17	FOR INFORMATION				

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**KILLIECRANKIE TO GLEN GARRY  
 PROPOSED MODIFICATIONS  
 TO CULVERT ON  
 WATERCOURSE WF157**

Drawing status: **FOR INFORMATION**

Scale: NTS @ A1 DO NOT SCALE

Jacobs No. B2140005

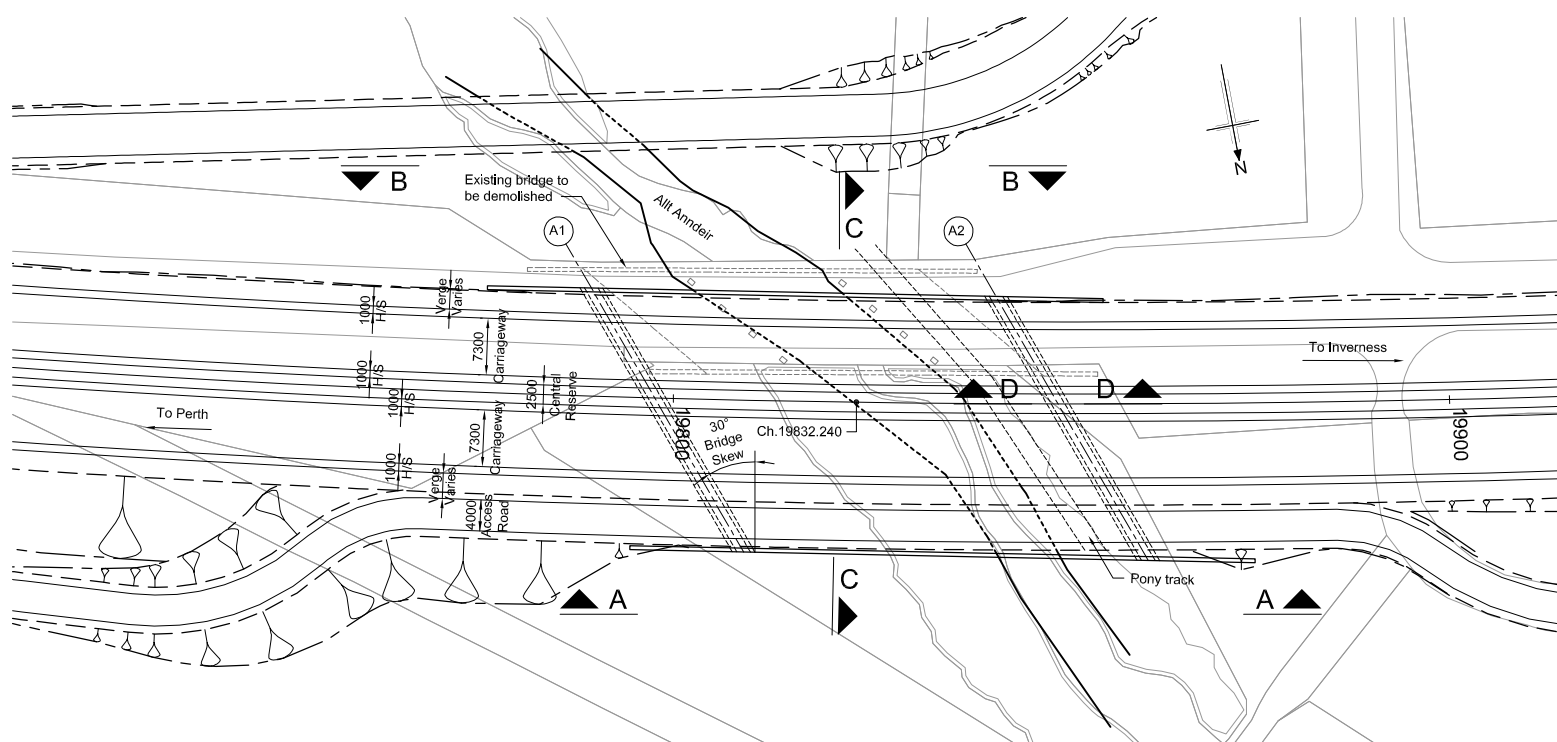
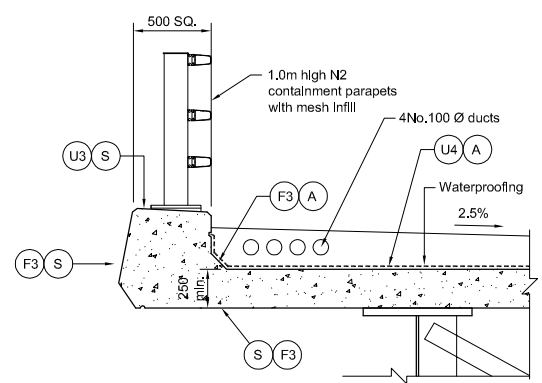
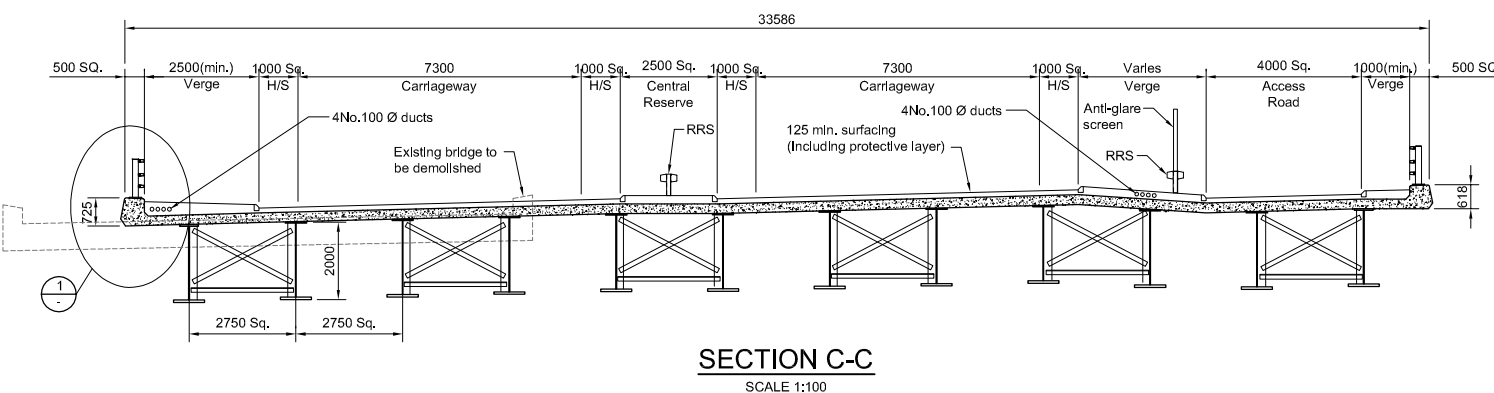
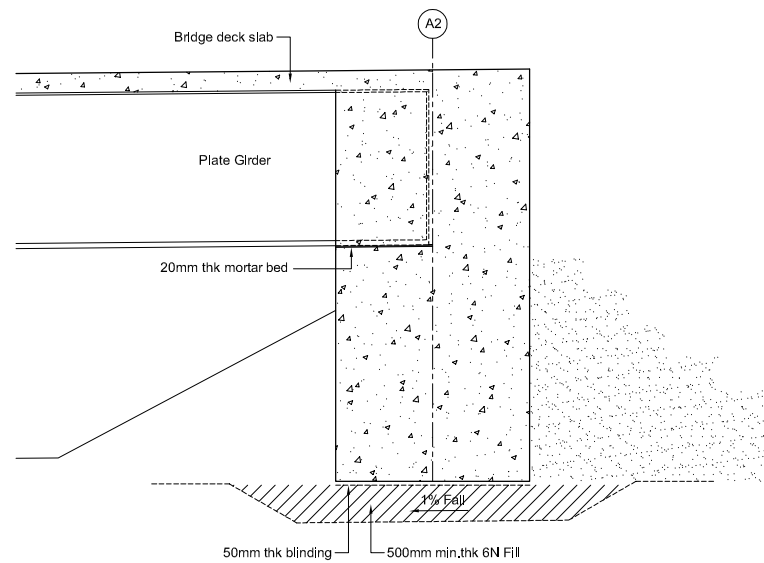
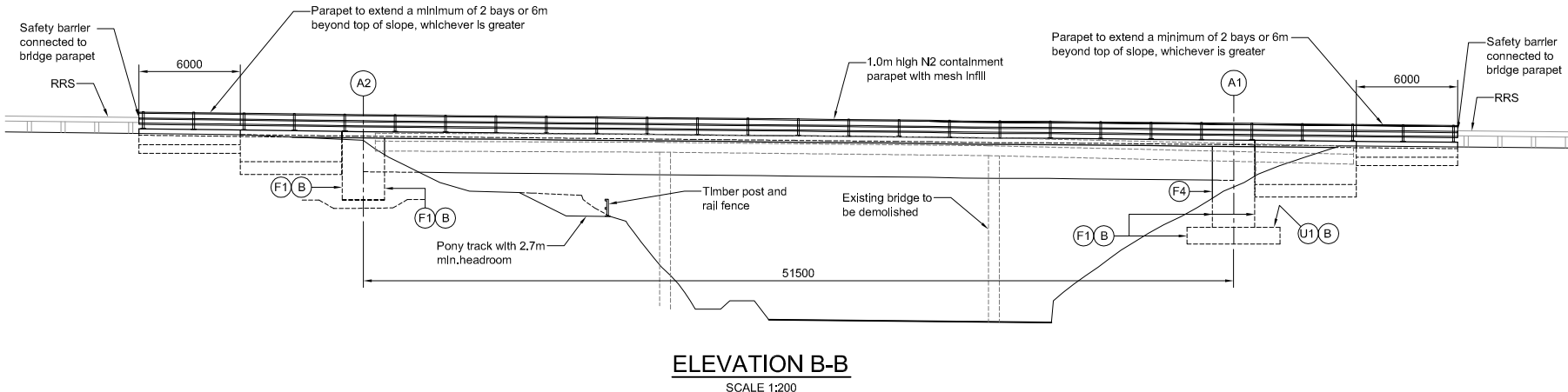
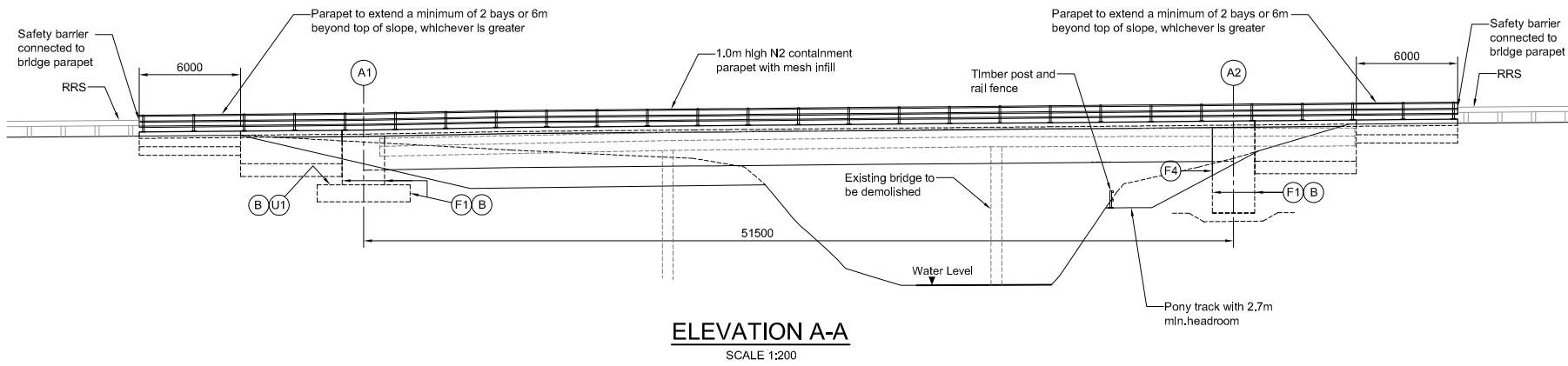
Drawing number: **Figure A.11.8.60**

Rev: **0**

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File: I:\Glarif\07\PV01\1ECBC\BWA\_Jobs\B2140005 A9 Dualling Temp folder\B2140005 Killiecrankie to Ptilagowan\CAD\Watercourse Modifications\WF157.dwg Date: Aug 03, 2017 - 10:55am Plotted by: WOODJA

File: A:\B2140005 Killiecrankie to Pitagowan\CAD\Watercourse Modifications\A9D05-JAC-SBRA-ML198-ST-M2-ST-0001 Rev P2 - Dalnamein Bridge.dwg Date: Nov 16, 2017 - 6:16pm Plotted by: WOODUA



- Notes.
- All dimensions are in millimetres unless noted otherwise.
  - All levels are in metres Above Ordnance Datum.
  - All chainages are in metres.
  - All exposed arrises to have 25x25 chamfers unless noted otherwise.
  - Concrete finishes denoted thus:
    - (F) - Formed
    - (U) - Unformed
  - Concrete protection to be as follows:
    - (S) - Surface Impregnation in accordance with BD43 of the DMRB.
    - (A) - Spray applied waterproofing in accordance with CI 2003 of the Specification.
    - (B) - Waterproofing of all buried concrete surfaces in accordance with CI 2004 of the Specification.
  - All details shown on this drawing are Indicative only and subject to development.

P2	22/05/17	DMRB Stage 3 Report - Draft	MG	IA	MAM	ELM
P1	06/01/17	Design Flt 4 - Issue for Review	MG	IA	MAM	ELM
Rev	Rev. Date	Purpose of revision	Drawn	Checked	Rev'd	Appr'd

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Drawing title		
<b>KILLIECRANKIE TO GLEN GARRY DALNAMEIN UNDERBRIDGE GENERAL ARRANGEMENT</b>		
Drawing status		
Scale	AS SHOWN @ A1	DO NOT SCALE
Jacobs No.	B2140005	
Drawing number	Figure A.11.8.61	Rev P2
This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.		

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:	
<b>CONSTRUCTION</b>	
<ul style="list-style-type: none"> <li>Service survey required pre-construction</li> <li>Potential presence in existing structure of harmful substances causing damage to health to be established pre-demolition</li> <li>Structure stability to be checked during break-out / demolition of existing structure</li> <li>Nature and position of the existing structure foundations to be verified pre-construction by undertaking investigations</li> <li>Condition of existing structure may not be as anticipated</li> <li>Existing structure may not be accurately represented by record drawings</li> <li>Position of existing structure may not be as shown</li> </ul>	
<b>MAINTENANCE / CLEANING</b>	
None	
<b>DECOMMISSIONING / DEMOLITION</b>	
None	
It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement	

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**PLAN**  
 SCALE 1:500