Appendix 11.4

Hydromorphology Assessment Part 2

Annex 11.4.3 - Hydromorphological Catchment Assessment - 76

Catchment No.	**76**
Catchment Name	**-**

Channel Nature	Nature of water course	Natural
	Size of water course	Minor

Quantitative Spatial Elements	Catchment Area (km^2)	1.2
	Average slope in catchment (°)	9
	% Catchment over 750m (for snow melt risk)	1.2

WFD classification	Water, flows and levels	Good
	Physical condition	Good
	Overall ecological status	Good

Geology	Majority Bedrock (see Drawing 11.4.3.1 a and b Catchment 76)	Gaick Psammite formation-Psammite	resistant to weathering, impermeable
	Is an alluvial fan present at or near the crossing?	No	

Environmental designations (see Drawing 11.4.3.1 c, Catchment 76)	Ramsar	No	
	SAC	Yes	**Drumochter Hills -** Acidic scree, alpine and subalpine heaths, blanket bog, dry heaths, montane acid grasslands , mountain willow scrub, plants in crevices on acid rocks, species-rich grassland with mat-grass in upland areas, tall herb communities, wet heathland with cross-leaved heath. **River Spey** - Atlantic salmon, freshwater pearl mussel, otter, sea lamprey
	SPA	Yes	**Drumochter Hills -** Dotterel breeding, merlin breeding
	SSSI	Yes	**Drumochter Hills -** Breeding bird assemblage, fluvial geomorphology of Scotland, montane assemblage, vascular plant assemblage

Sediment source and supply - Catchment Scale	Changes in slope and channel confinement	See Drawing 11.4.3.2, Catchment 76	
	Is peat present in the catchment	Yes	Possible thin peat cover
	Is there a bog burst risk	No	
	Current valley side or terrace erosion	No	
	Potential valley side or terrace erosion	No	
	Hill slope failures (including peat slides and debris flows and slides)	Yes	Possible small peat slides from convexity in upper catchment
	Hill slope failures coupled to channel	No	Very distant from channel. Unlikely to reach channel
	Vertical incision present in catchment	No	
	Bank erosion/lateral migration	No	
	Unvegetated bars	No	
	Wooded/forested areas in catchment	Yes	Linear plantation forestry u/s of crossing
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 76)	No	
	Comment on sediment source potential in catchment	Limited. Several possible shallow failure scars in upper catchment visible in Google Earth, but disconnected from channel network	
	Comment on sediment supply potential to crossing	Limited. Several possible shallow failure scars in upper catchment visible in Google Earth, but disconnected from channel network	

Morphology and Process-Reach upstream of crossing	Channel morphology	Plane bed	
	Predominant sediment size	Large gravel-cobble	
	Unvegetated bars	No	
	Vertical incision	Low	
	Deposition	Medium	Deposition of coarse (gravel-cobble) angular sediment evident where channel bends to parallel road and gradient lost
	Lateral migration/bank erosion	Low	Yes, erosion on outside of bend where above deposition is occurring on inside of bend. Point bar building on inside of bend (photo 4346) reinforcing lateral migration which is undercutting the bank.
	Presence and nature of infrastructure (Map 1d)	No	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 76)	No	
	Channel realignment	No	

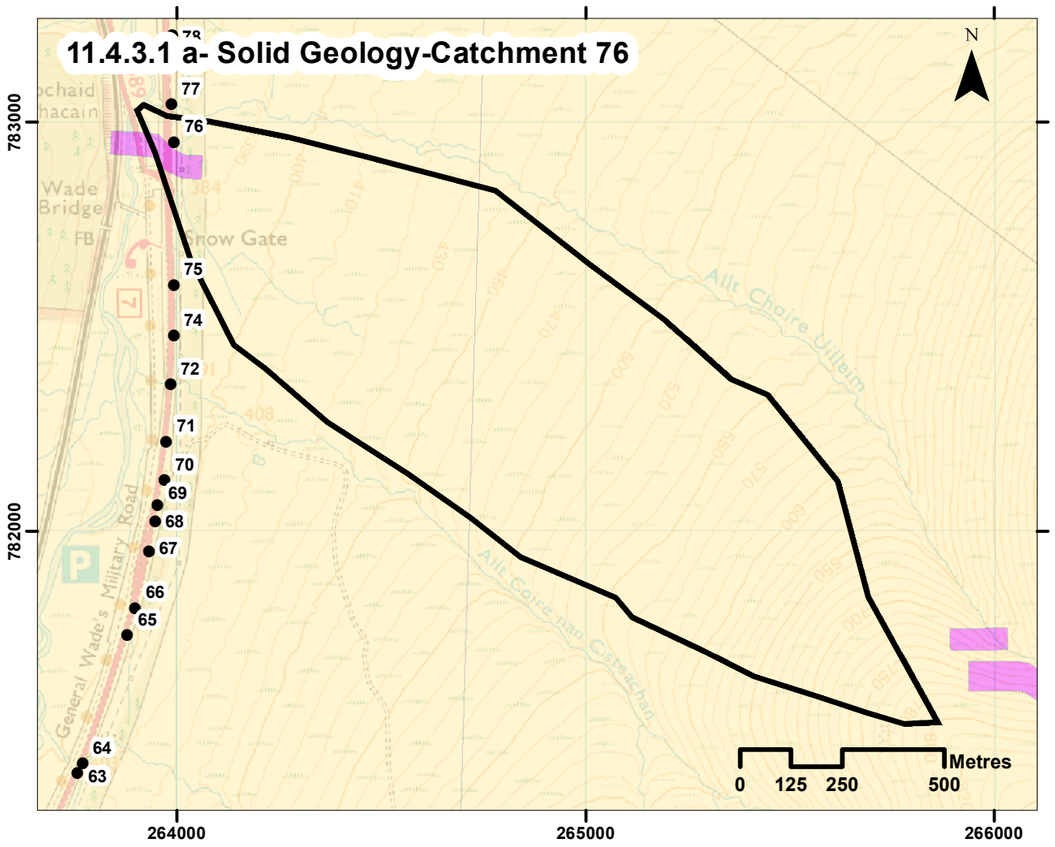
Morphology and Process-At crossing	Channel morphology	Engineered	
	Predominant sediment size	-	
	Estimated discharge at 1:200 event (m^3/s)	7.1	
	Unvegetated bars	No	
	Vertical incision	None	
	Deposition	Low	
	Lateral migration/bank erosion	Low	
	Damaged/unstable drains or armouring	No	

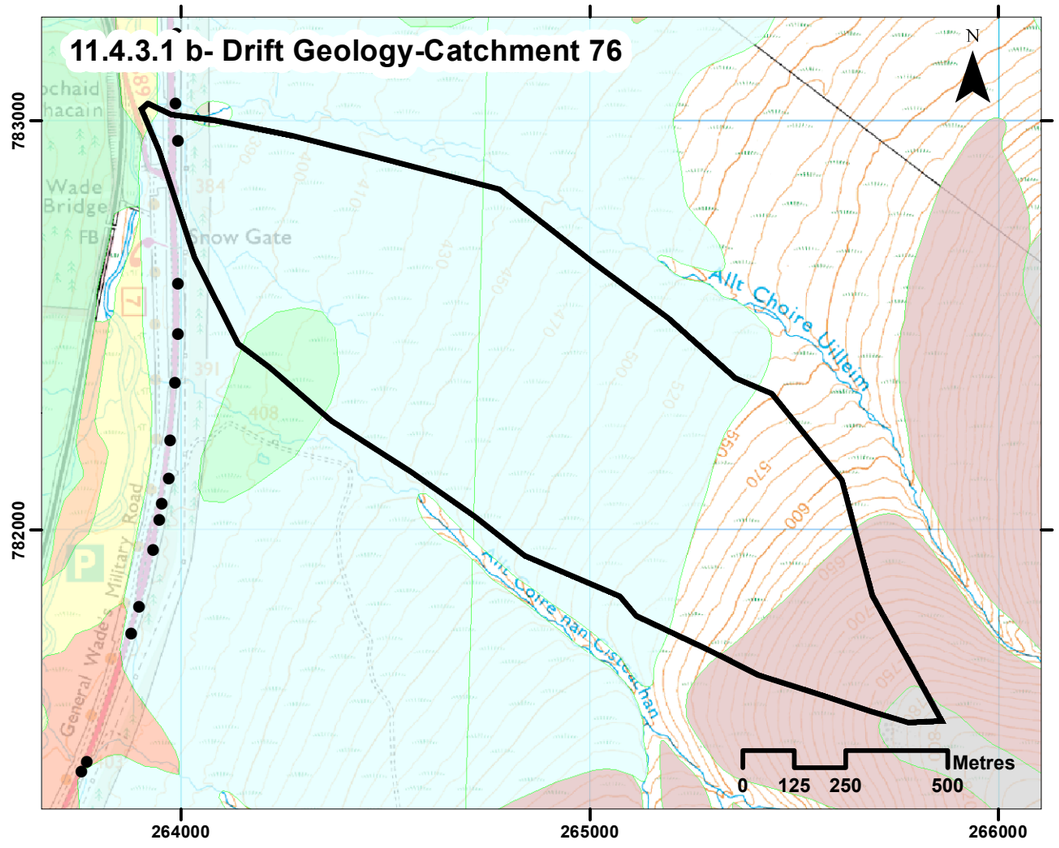
Morphology and Process-Reach downstream of crossing	Channel morphology	Plane bed	
	Predominant sediment size	Cobble	
	Unvegetated bars	No	
	Vertical incision	Low	
	Deposition	Medium	
	Lateral migration/bank erosion	Low	
	Presence and nature of infrastructure (Map 1d)	No	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 76)	No	
	Channel realignment	Yes	Previously channel would have been a tributary of the Allt Coire Uilleim, joining it in its lowest reaches before entering the Truim. Channel has been substantially realigned to enter the Truim directly

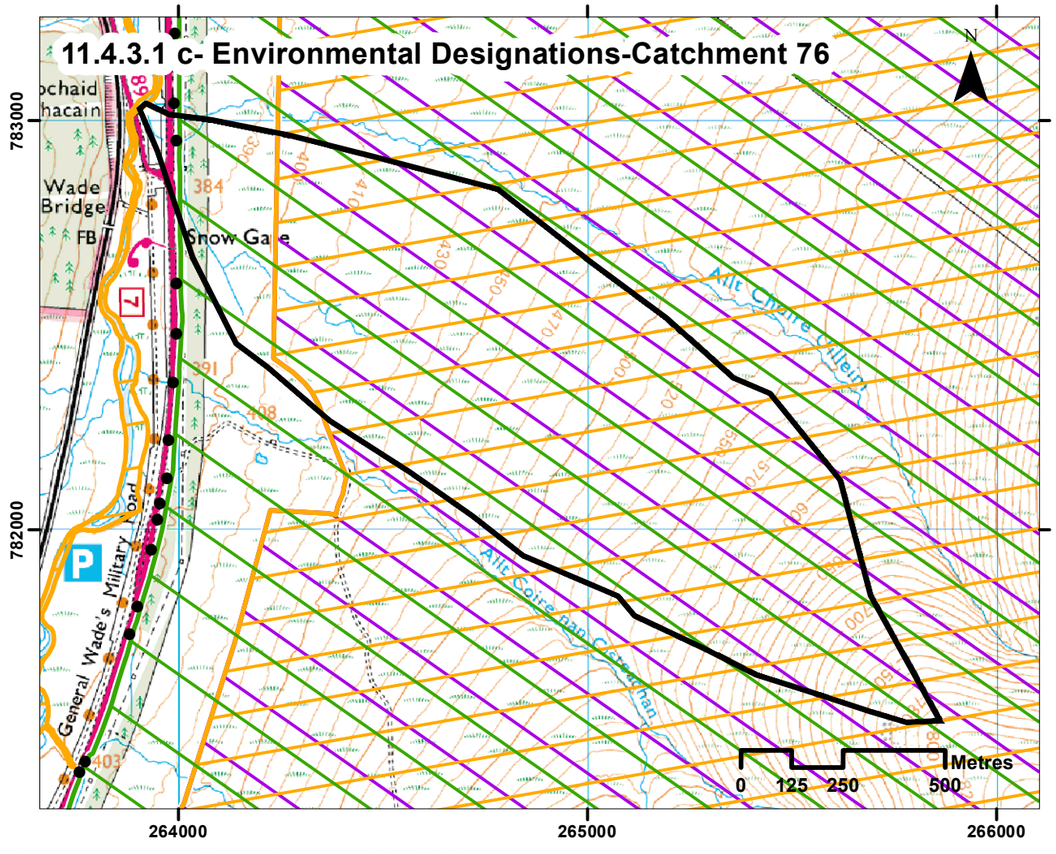
Summary behaviour	The natural headwaters of the channel have been cut off by a drain, which crosses the slope diagonally, seemingly to maintain channel gradient towards crossing 76. Previously the channel alignment was more directly downslope and across the current alignment of the road, before the channel turned c.90° to flow northwards wandering approximately around the current alignment of the A9. The vertical alignment of the A9 in a low cutting at the point where the original channel crossed the alignment has necessitated this diversion. C.35m u/s of the crossing, the cut drain reaches the toe of the low embankment on which the A9 runs and takes a sharp turn and loses gradient. The toe of the embankment slope is being undercut here and a point bar is being deposited, reinforcing the undercutting. Deposition of coarse sediment is also evident in the low gradient, road-parallel channel as it approaches the crossing. At the crossing, flow from other drains joins the main channel. D/s of the crossing the channel drops relatively steeply to the main Truim channel and has a bed of large gravel-cobble size material. THIS CHANNEL LIKELY TO HAVE OPPORTUNITIES FOR IMPROVED ALIGNMENT/MORPHOLOGY.

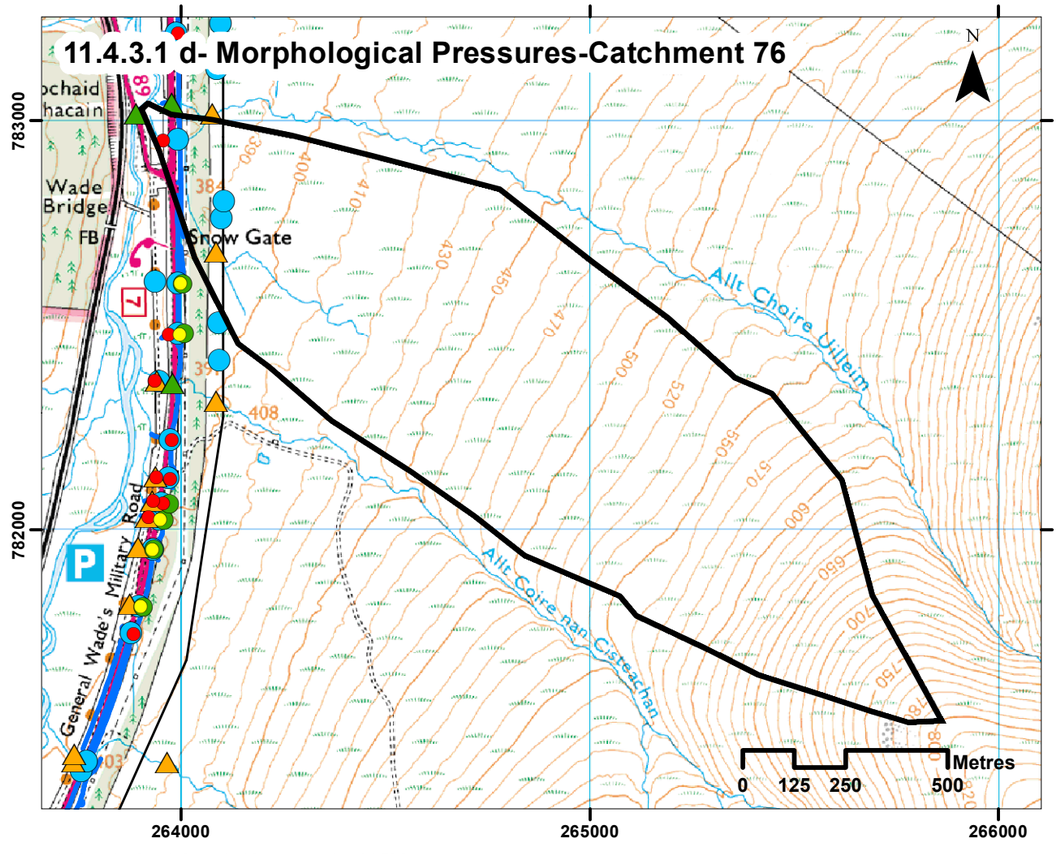
Photograph 11.4.3.38 - No deposition in culvert

Photograph 11.4.3.39 – Downstream to crossing









Legend

General
- Crossing Location
- Catchment Area

Solid Geology
- Gaick Psammite Formation - Psammite
- Scottish Highland Ordovician Minor Intrusion Suite - Pegmatite

Drift Geology
- Peat
- Glaciofluvial Ice Contact Deposits
- Gaick Plateau Moraine Formation
- Hummocky Glacial Deposits
- Ardverikie Till Formation - Diamicton
- Glaciofluvial Sheet Deposits
- Alluvium
- River Terrace Deposits
- Alluvial Fan Deposits
- Head
- Talus - Rock Fragments
- Talus Cone

Environmental Designations
- Special Site of Scientific Interest
- Special Area of Conservation
- Special Protection Area

Morphological Pressures
- Road Bridge
- Track/Footbridge
- Culvert
- Cascade
- Step in Bed
- Catchpit
- Drainage Ditch
- Power Lines

REV	SUIT	DATE	DESCRIPTION	BY	APP

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TRANSPORT SCOTLAND
A9 DUALLING PERTH TO INVERNESS

PROJECT 8 DALWHINNIE TO CRUBENMORE EIA

Drawing 11.4.3.1 Catchment 76 Catchment Overview

DESIGN:	DRAWN:	CHK:	APP:
EL	EV	EL	EL

DATE: 12/07/2017

PROJ: 495298

DWG: A9P08-CFJ-EWE-X_ZZZZZ_ZZ-DR-EN-0001

SHEET:	REVISION:	SUITABILITY:
1 of 1	C01	A3

Undercutting of embankment toe where channel turns to be parallel to road

Many small channels moving sediment and water towards the crossing

Original natural channel cut off by drain

Peat slides in steep upper catchment

Snow Gate

Allt Choire Uilleim

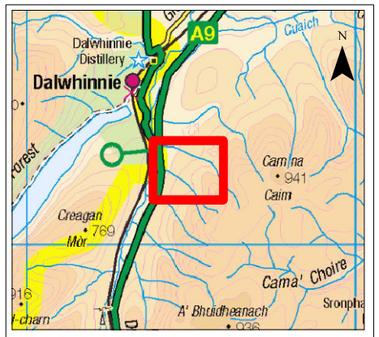
Allt Coire nan Cìreachan

A889

Military Road

N

0 75 150 300 Metres



Legend

- Major crossing
- Minor crossing
- Other crossing
- Peat slide
- Break in slope
- Original channel
- Crossing catchment

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TRANSPORT SCOTLAND

A9 DUALLING PERTH TO INVERNESS

PROJECT 8 DALWHINNIE TO CRUBENMORE EIA

DRAWING 11.4.3.2.
Catchment 76 Baseline Assessment

DESIGN:	DRAWN:	CHK:	APP:
EL	EL	AB	EL

DATE: 11/07/2017

PROJ: 495298

DWG: A9P08-CFJ-EWE-X_ZZZZZ_ZZ-DR-EN-0002

SHEET:	REVISION:	SUITABILITY:
1 OF 1	C01	A3

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Annex 11.4.3 - Hydromorphological Catchment Assessment - 77

Catchment No.	77
Catchment Name	Allt Choire Uilleim

Channel Nature	Nature of water course	Natural	
	Size of water course	Major	
Quantitative Spatial Elements	Catchment Area (km^2)	1.8	
	Average slope in catchment (°)	14.2	
	% Catchment over 750m (for snow melt risk)	52.8	
WFD classification	Water, flows and levels	Good	
	Physical condition	Good	
	Overall ecological status	Good	
Geology	Majority Bedrock (see Drawing 11.4.3.1 a and b Catchment 77)	Gaick Psammite formation-Psammite	resistant to weathering, impermeable
	Is an alluvial fan present at or near the crossing?	No	
Environmental designations (see Drawing 11.4.3.1 c, Catchment 77)	Ramsar	No	
	SAC	Yes	**Drumochter Hills** - Acidic scree, alpine and subalpine heaths, blanket bog, dry heaths, montane acid grasslands , mountain willow scrub, plants in crevices on acid rocks, species-rich grassland with mat-grass in upland areas, tall herb communities, wet heathland with cross-leaved heath. **River Spey** - Atlantic salmon, freshwater pearl mussel, otter, sea lamprey
	SPA	Yes	**Drumochter Hills** - Dotterel breeding, merlin breeding
	SSSI	Yes	Drumochter Hills - Breeding bird assemblage, fluvial geomorphology of Scotland, montane assemblage, vascular plant assemblage
Sediment source and supply - Catchment Scale	Changes in slope and channel confinement	See Drawing 11.4.3.2, Catchment 77	
	Is peat present in the catchment	Yes	On plateau (from superficials map and possibly on upper side slopes)
	Is there a bog burst risk	No	
	Current valley side or terrace erosion	Yes	Gullying in upper catchment
	Potential valley side or terrace erosion	Yes	1.32
	Hill slope failures (including peat slides and debris flows and slides)	Yes	Multiple (>10)
	Hill slope failures coupled to channel	Yes	Multiple (>20) upper catchment
	Vertical incision present in catchment	Yes	Gullying in upper catchment
	Bank erosion/lateral migration	Yes	Limited meandering in mid-catchment
	Unvegetated bars	No	
	Wooded/forested areas in catchment	Yes	Immediately u/s of crossing
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 77)	None	
	Comment on sediment source potential in catchment	Very high potential for sediment supply in upper catchment from gullying and hillslope failures (coupled). Possible peat slides from upper slopes too.	
	Comment on sediment supply potential to crossing	High. Channel gradient reduces gradually downstream but relatively steep until immediately u/s of crossing, making mid and lower catchment transfer zone. Evidence for potential high delivery of sediment is increase in mobile coarse sediment in main Truim channel at and d/s of confluence with 77, although it is acknowledged that this may in part result from the impoundment effect of the dam d/s on the Truim.	
Morphology and Process-Reach upstream of crossing	Channel morphology	Plane bed	
	Predominant sediment size	Coarse (Gravel-Cobble)	
	Unvegetated bars	Yes	Google Earth shows unvegetated bars u/s of crossing which have since revegetated
	Vertical incision	Low	
	Deposition	Medium	See above
	Lateral migration/bank erosion	Medium	None at present, but Google Earth indicates previous migration between terrace slopes.
	Presence and nature of infrastructure (Map 1d)	No	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 77)	No	
	Channel realignment	Yes	Diverted north, shortening route to main Truim channel
Morphology and Process-At crossing	Channel morphology	Plane bed	
	Predominant sediment size	Coarse (Gravel-Cobble)	
	Estimated discharge at 1:200 event (m^3/s)	9.61	
	Unvegetated bars	No	
	Vertical incision	Low	
	Deposition	Low	
	Lateral migration/bank erosion	Low	
	Damaged/unstable drains or armouring	No	
Morphology and Process-Reach downstream of crossing	Channel morphology	Plane bed	
	Predominant sediment size	Coarse (Gravel-Cobble)	
	Unvegetated bars	Yes	
	Vertical incision	Medium	
	Deposition	Medium	
	Lateral migration/bank erosion	Low	
	Presence and nature of infrastructure (Map 1d)	Yes	Dam on main Truim channel c. 500m d/s of confluence.
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 77)	Yes	Possibly impoundment effect at high flows when most sediment entering main Truim channel from 77
	Channel realignment	Yes	Historic OS mapping shows a substantially different channel with longer, meandering channel length, possibly acting as a backwater of the main Truim on the floodplain.
Summary behaviour	Upper catchment has the potential for very high sediment production from a range of sources including, incising gullies in steep headwaters, coupled and uncoupled valley side failures (sediment from uncoupled failures might be brought d/s at highest flows). Plane bed channel in mid catchment is wandering to a certain extent, but little evidence of deposition and is therefore assessed as a transfer zone (still quite steep) creating high likelihood of sediment reaching the crossing. Lowest part of catchment has been realigned (or at least has changed significantly since earliest OS six inch mapping), reducing the channel length (and presumably increasing gradient). This appears to result in shifting the main zone of deposition into the main Truim channel where exposed bars of coarse sediment increase substantially immediately d/s of the confluence with 77. High sediment supply potential and deposition potential if channel gradient altered. Gullies and hillslope failures in upper catchment supplying high amount of sediment which is deposited		

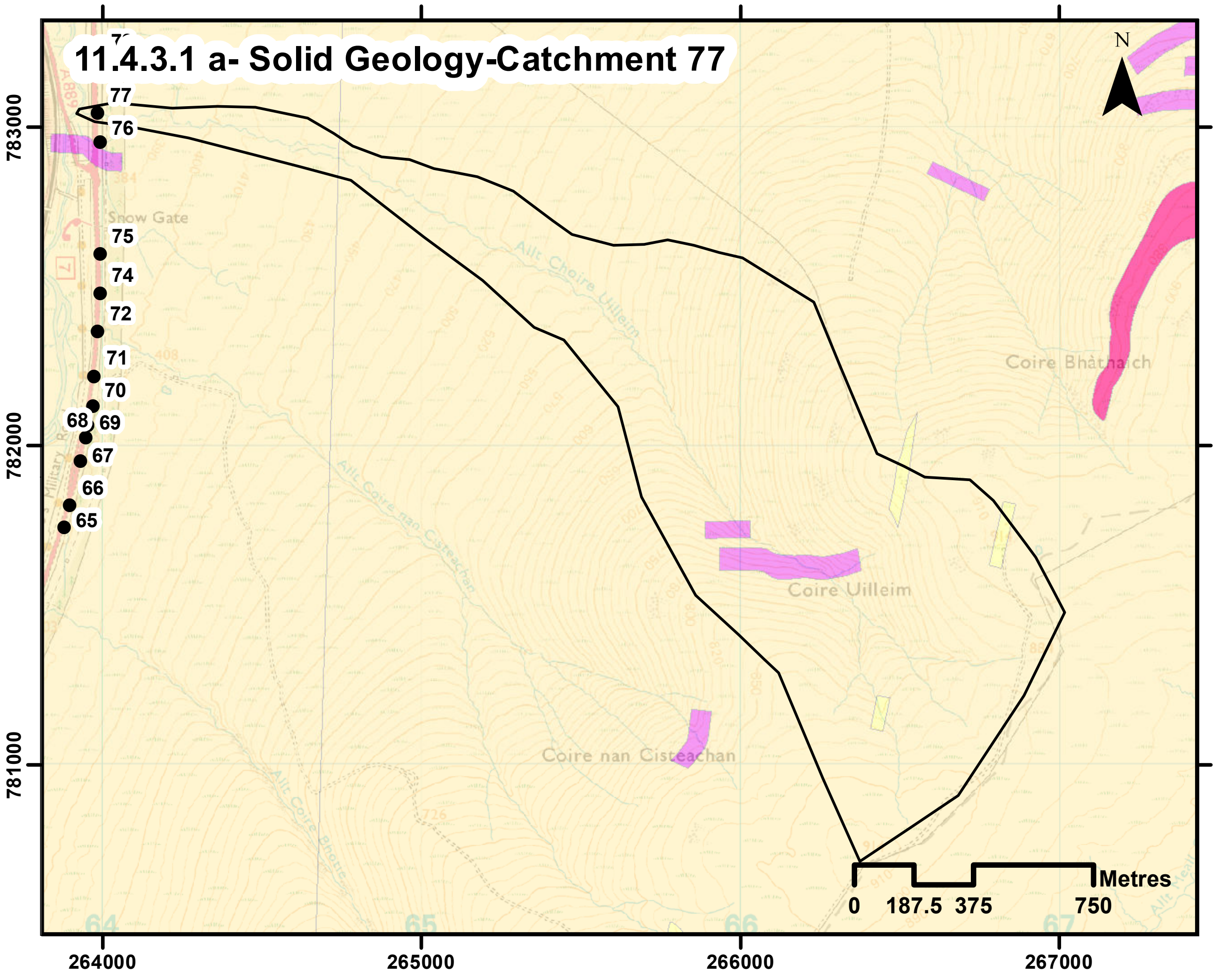
Photograph 11.4.3.40 - Downstream

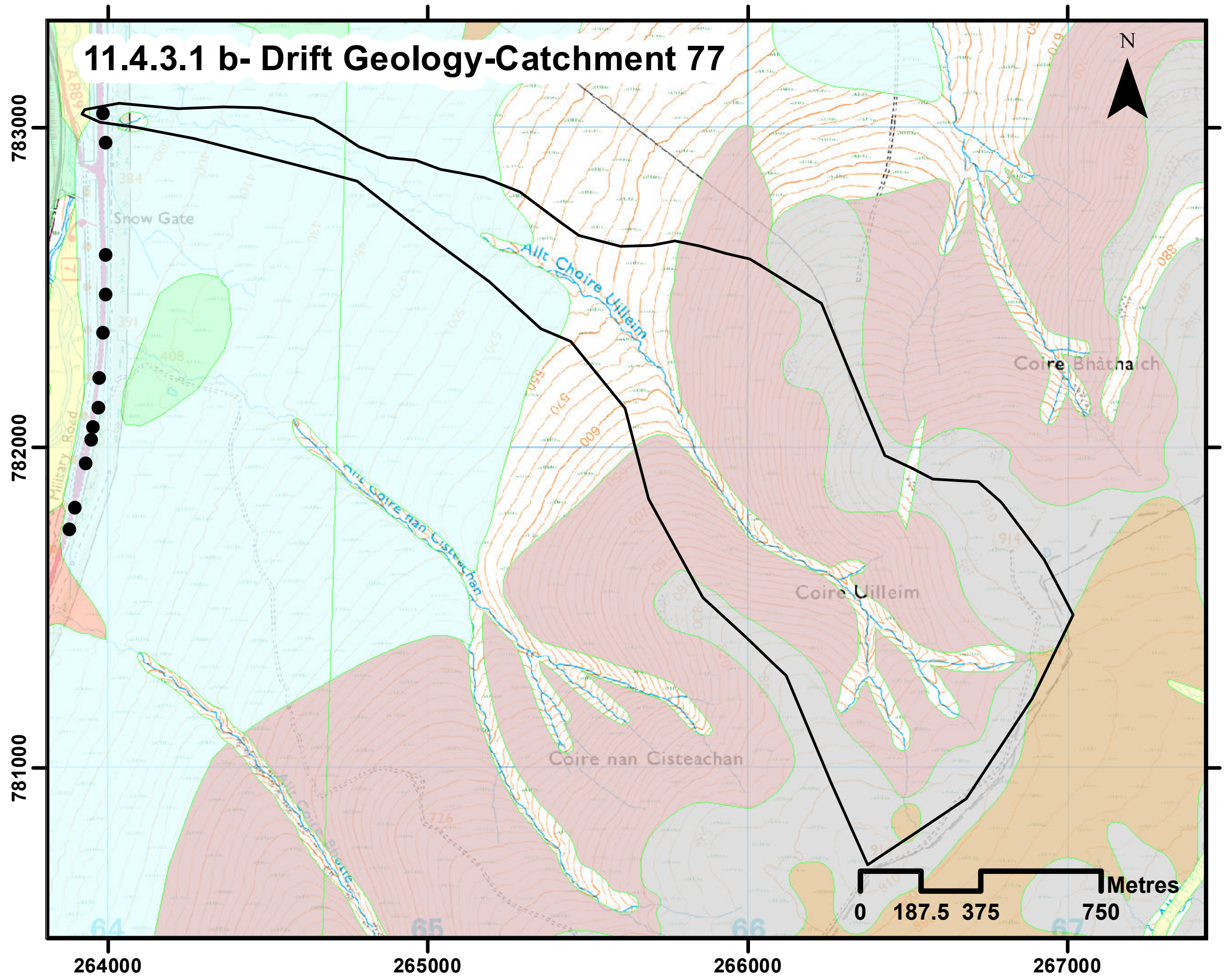
Photograph 11.4.3.41 - Upstream to crossing

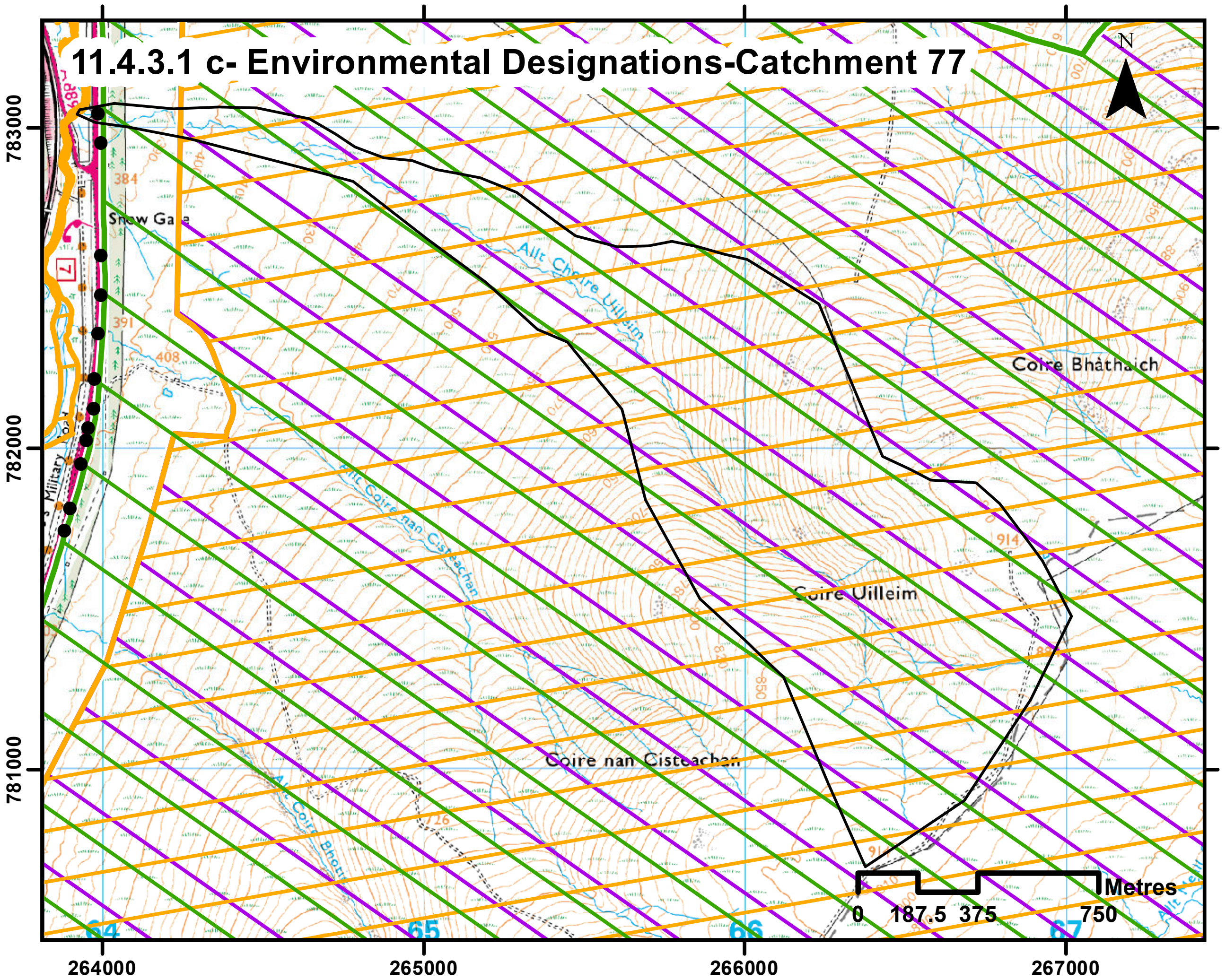
Photograph 11.4.3.42 -Localised erosion downstream of crossing

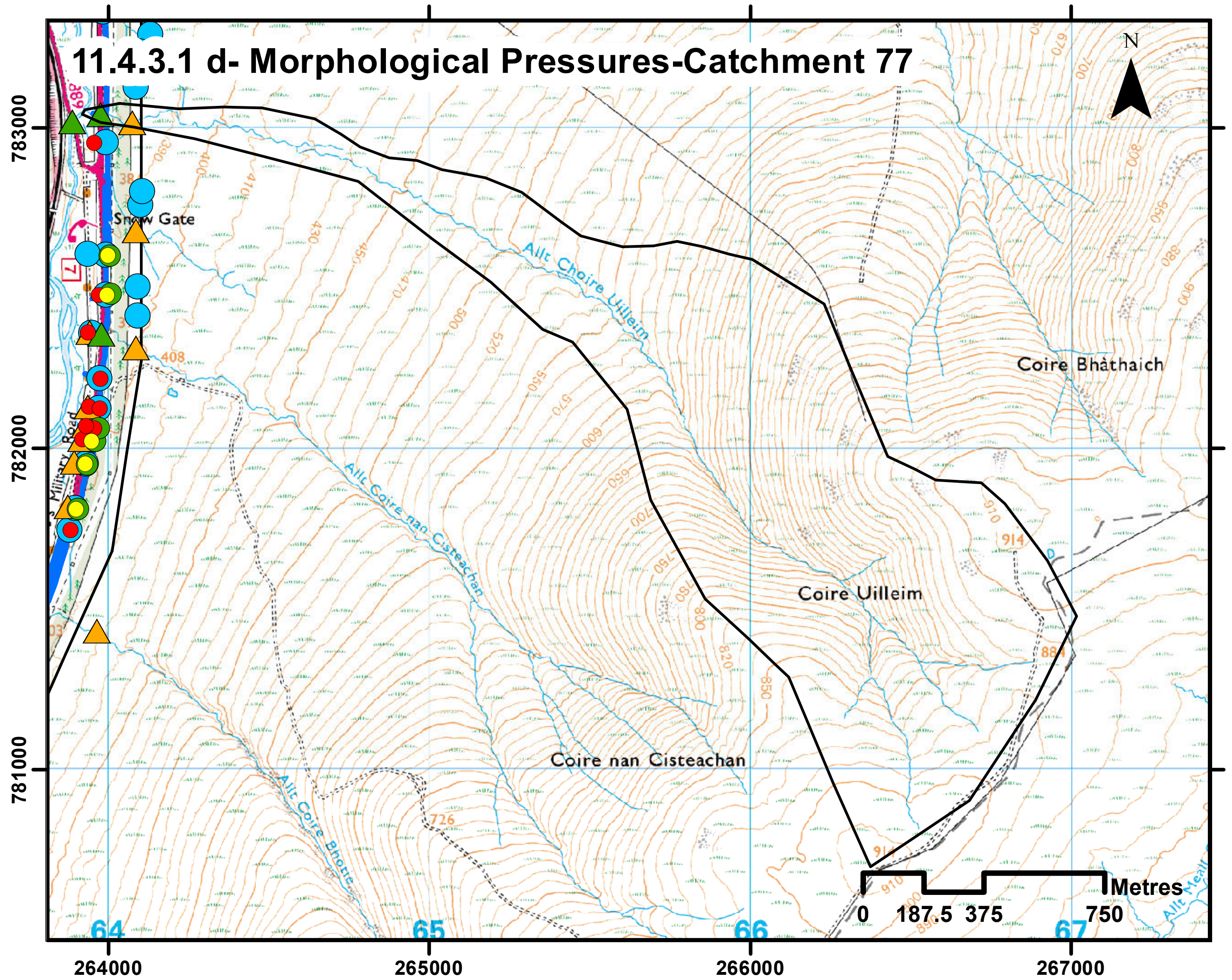
Photograph 11.4.3.43 - Upstream to plane bed channel

Photograph 11.4.3.44- Downstream to culvert entrance









Legend

General
- Crossing Location

Solid Geology
- Gaick Psammite Formation - Psammite
- Scottish Highland Ordovician Minor Intrusion Suite - Pegmatite
- Vein-Quartz

Drift Geology
- Peat
- Glaciofluvial Ice Contact Deposits
- Gaick Plateau Moraine Formation
- Hummocky Glacial Deposits
- Ardverikie Till Formation - Diamicton
- Glaciofluvial Sheet Deposits
- Alluvium
- River Terrace Deposits
- Alluvial Fan Deposits
- Head
- Talus - Rock Fragments
- Talus Cone

Environmental Designations
- Special Site of Scientific Interest
- Special Area of Conservation
- Special Protection Area

Morphological Pressures
- Road Bridge
- Track/Footbridge
- Culvert
- Cascade
- Step in Bed
- Catchpit
- Drainage Ditch
- Power Lines

REV	SUIT	DATE	DESCRIPTION	BY	APP

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PROJECT 8 DALWHINNIE TO CRUBENMORE EIA

Drawing 11.4.3.1 Catchment 77 Catchment Overview

DESIGN:	DRAWN:	CHK:	APP:
EL	EV	EL	EL

DATE: 12/07/2017

PROJ: 495298

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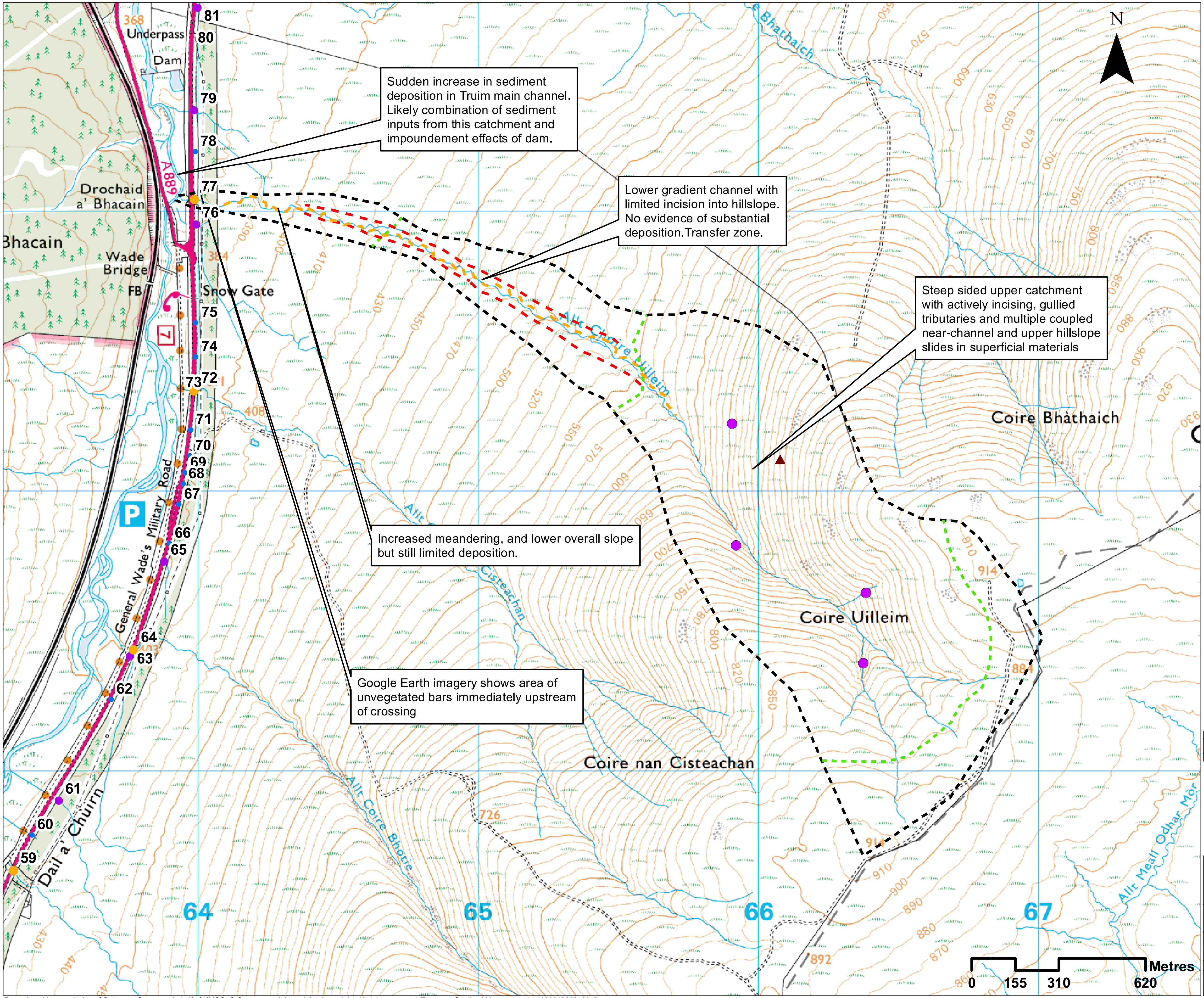

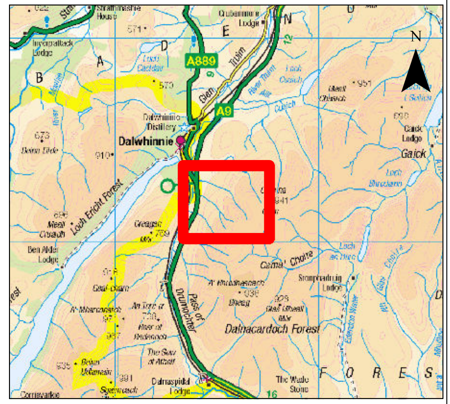

Legend

- Major crossing
- Minor crossing
- Other crossing
- Peat
- Coupled debris flow
- Break in slope
- Terrace
- Potential valley side erosion
- Crossing catchment

REV	SUIT	DATE	DESCRIPTION	BY	APP

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PROJECT 8 DALWHINNIE TO CRUBENMORE EIA

DRAWING 11.4.3.2.
Catchment 77 Baseline Assessment

DESIGN:	DRAWN:	CHK:	APP:
EL	EL	AB	EL

DATE: 11/07/2017

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DWG: A9P08-CFJ-EWE-X_ZZZZZ_ZZ-DR-EN-0002

SHEET:	REVISION:	SUITABILITY:
1 OF 1	C01	A3

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Annex 11.4.3 - Hydromorphological Catchment Assessment - 78

Catchment No.	78
Catchment Name	-

Channel Nature	Nature of water course	Drain
	Size of water course	Other

Quantitative Spatial Elements	Catchment Area (km^2)	Small unmapped catchment
	Average slope in catchment (°)	4
	% Catchment over 750m (for snow melt risk)	0

WFD classification	Water, flows and levels	Good
	Physical condition	Good
	Overall ecological status	Good

Geology	Majority Bedrock (see Drawing 11.4.3.1 a and b Catchment 78)	Gaick Psammite formation-Psammite	resistant to weathering, impermeable
	Is an alluvial fan present at or near the crossing?	No	

Environmental designations (see Drawing 11.4.3.1 c, Catchment 78)	Ramsar	No	
	SAC	Yes	**Drumochter Hills** - Acidic scree, alpine and subalpine heaths, blanket bog, dry heaths, montane acid grasslands , mountain willow scrub, plants in crevices on acid rocks, species-rich grassland with mat-grass in upland areas, tall herb communities, wet heathland with cross-leaved heath. **River Spey** - Atlantic salmon, freshwater pearl mussel, otter, sea lamprey
	SPA	Yes	**Drumochter Hills -** Dotterel breeding, merlin breeding
	SSSI	Yes	**Drumochter Hills -** Breeding bird assemblage, **fluvial geomorphology of Scotland**, montane assemblage, vascular plant assemblage

Sediment source and supply - Catchment Scale	Changes in slope and channel confinement	See Drawing 11.4.3.2, Catchment 78	
	Is peat present in the catchment	Yes	Patchy, thin
	Is there a bog burst risk	No	
	Current valley side or terrace erosion	No	
	Potential valley side or terrace erosion	No	
	Hill slope failures (including peat slides and debris flows and slides)	No	
	Hill slope failures coupled to channel	No	
	Vertical incision present in catchment	No	
	Bank erosion/lateral migration	No	
	Unvegetated bars	No	
	Wooded/forested areas in catchment	Yes	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 78)	No	
	Comment on sediment source potential in catchment	Limited - well vegetated few bare patches or incision	
	Comment on sediment supply potential to crossing	Limited - well vegetated few bare patches or incision	

Morphology and Process-Reach upstream of crossing	Channel morphology	Engineered	
	Predominant sediment size	Fine	
	Unvegetated bars	None	
	Vertical incision	None	
	Deposition	Medium	
	Lateral migration/bank erosion	None	
	Presence and nature of infrastructure (Map 1d)	No	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 78)	No	
	Channel realignment	Yes	New hillside and slope parallel drain with right angle turns.

Morphology and Process-At crossing	Channel morphology	Engineered	
	Predominant sediment size	Coarse (gravel-cobble)	
	Estimated discharge at 1:200 event (m^3/s)	0.2	
	Unvegetated bars	No	
	Vertical incision	None	
	Deposition	High	
	Lateral migration/bank erosion	None	
	Damaged/unstable drains or armouring	None	

Morphology and Process-Reach downstream of crossing	Channel morphology	Plane bed	
	Predominant sediment size	Fine	
	Unvegetated bars	No	
	Vertical incision	None	
	Deposition	Low	
	Lateral migration/bank erosion	Low	
	Presence and nature of infrastructure (Map 1d)	No	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 78)	No	
	Channel realignment	Yes	Road drain
Summary behaviour	Road drain capturing hillslope run-off via realigned channels. Coarse sediment deposited upstream of culvert, but potentially this hasn't moved very far and may originate from electricity transmission line construction.		

Annex 11.4.3 - Hydromorphological Catchment Assessment - 79

Catchment No.	**79**
Catchment Name	-

Channel Nature	Nature of water course	Natural
	Size of water course	Minor

Quantitative Spatial Elements	Catchment Area (km^2)	0.4
	Average slope in catchment (°)	4
	% Catchment over 750m (for snow melt risk)	0

WFD classification	Water, flows and levels	Good
	Physical condition	Good
	Overall ecological status	Good

Geology	Majority Bedrock (see Drawing 11.4.3.1 a and b Catchment 79)	Gerick Psammite formation-Psammite	resistant to weathering, impermeable
	Is an alluvial fan present at or near the crossing?	No	

Environmental designations (see Drawing 11.4.3.1 c, Catchment 79)	Ramsar	No	
	SAC	Yes	Drumochter Hills - Acidic scree, alpine and subalpine heaths, blanket bog, dry heaths, montane acid grasslands, mountain willow scrub, plants in crevices on acid rocks, species-rich grassland with mat-grass in upland areas, tall herb communities, wet heathland with cross-leaved heath. River Spey - Atlantic salmon, freshwater pearl mussel, otter, sea lamprey
	SPA	Yes	**Drumochter Hills -** Dotterel breeding, merlin breeding
	SSSI	Yes	**Drumochter Hills -** Breeding bird assemblage, fluvial geomorphology of Scotland, montane assemblage, vascular plant assemblage

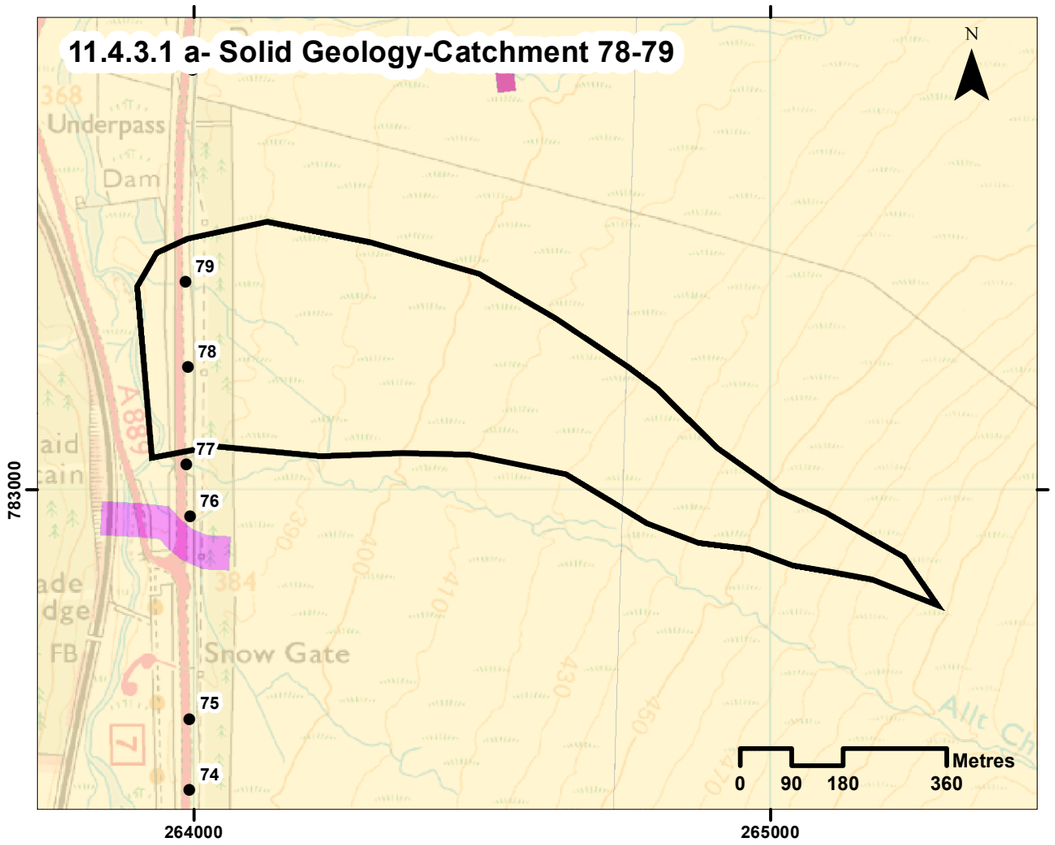
Sediment source and supply - Catchment Scale	Changes in slope and channel confinement	See Drawing 11.4.3.2, Catchment 79	
	Is peat present in the catchment	Yes	Patchy, thin
	Is there a bog burst risk	No	
	Current valley side or terrace erosion	Yes	Bank failure of tributary cut drain
	Potential valley side or terrace erosion	Yes	
	Hill slope failures (including peat slides and debris flows and slides)	No	
	Hill slope failures coupled to channel	No	
	Vertical incision present in catchment	Yes	Possible incision of drain leading to bank failure
	Bank erosion/lateral migration	Yes	See above
	Unvegetated bars	No	
	Wooded/forested areas in catchment	Yes	Linear planation forestry
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 79)	Yes	ETL tower site and access track. Also unidentifiable structure at u/s end of drain
	Comment on sediment source potential in catchment	Limited. Possible supply from ETL construction works. Some small scale incision in catchment.	
	Comment on sediment supply potential to crossing	Limited. Low gradient u/s of crossing and limited evidence of sediment supply at crossing.	

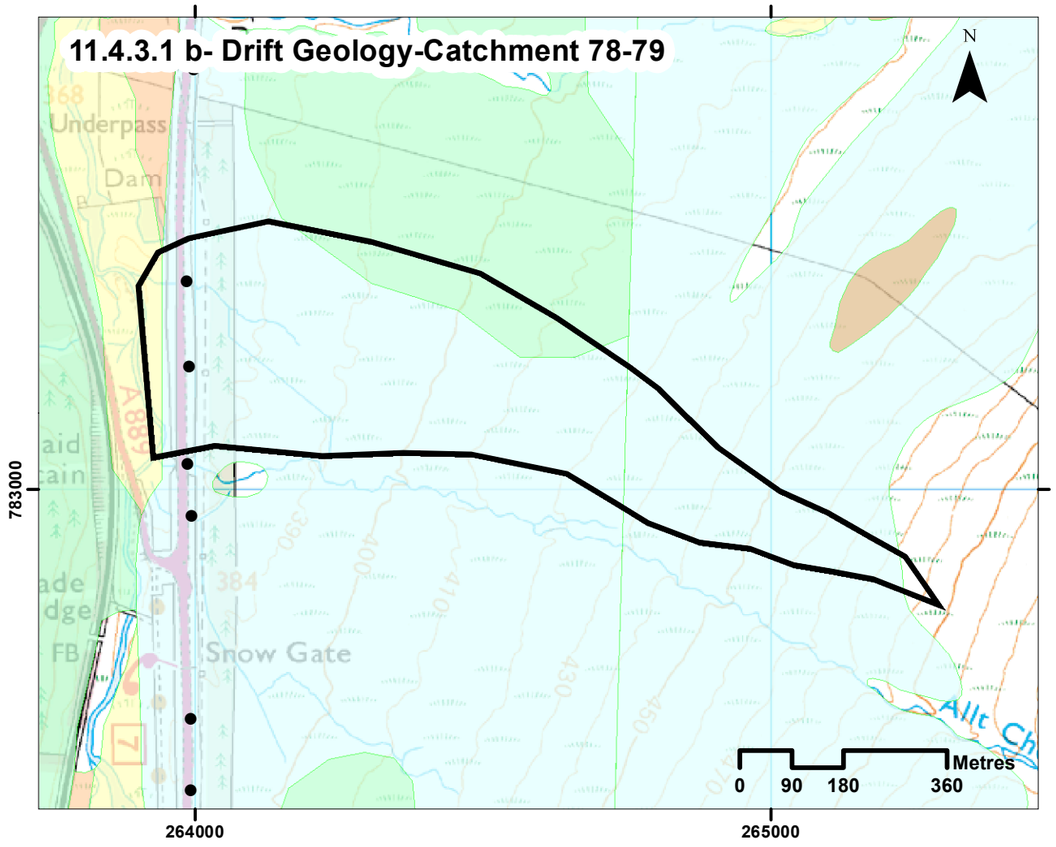
Morphology and Process-Reach upstream of crossing	Channel morphology	Plane bed	
	Predominant sediment size	Gravel with fine drape	
	Unvegetated bars	No	
	Vertical incision	None	
	Deposition	Low	Fines and small gravel
	Lateral migration/bank erosion	None	
	Presence and nature of infrastructure (Map 1d)	No	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 79)	No	
	Channel realignment	Yes	New hillside and slope parallel drain with right angle turns.

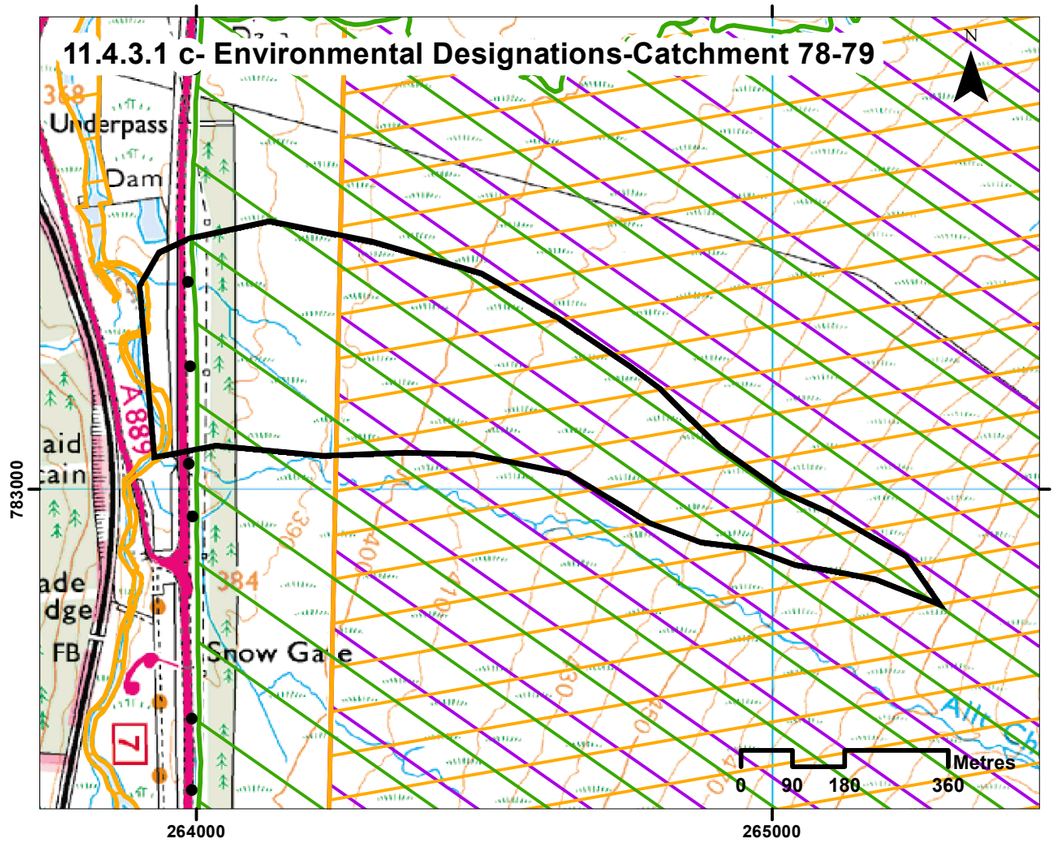
Morphology and Process-At crossing	Channel morphology	Engineered	
	Predominant sediment size	N/A	
	Estimated discharge at 1:200 event (m^3/s)	1.6	
	Unvegetated bars	No	
	Vertical incision	None	
	Deposition	None	
	Lateral migration/bank erosion	None	
	Damaged/unstable drains or armouring	No	

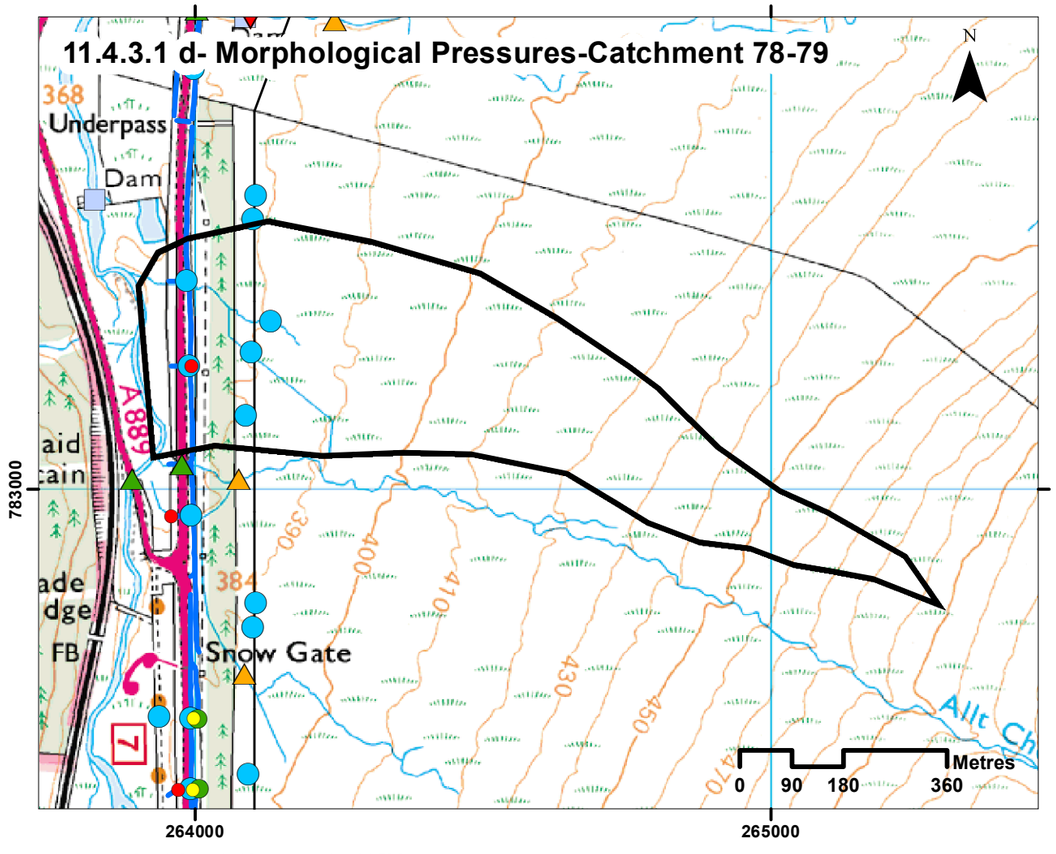
Morphology and Process-Reach downstream of crossing	Channel morphology	Plane bed	
	Predominant sediment size	N/A	No info
	Unvegetated bars	No	
	Vertical incision	Low	
	Deposition	None	
	Lateral migration/bank erosion	None	
	Presence and nature of infrastructure (Map 1d)	No	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 79)	No	
	Channel realignment	Yes	Appears to be cut drain d/s of road

Summary behaviour	Channel originally natural, but is joined on left bank u/s of road within the planation forestry. An unidentified structure is present at the u/s end of this drain and the right bank of the drain has failed partway down. The natural channel passes very close to the site of an ETL tower and crosses the ETL construction access track. These construction elements and the drain bank failure are potential supplies of sediment but this is not evident at the crossing. The crossing itself is armoured at its entrance where the channel falls to the culvert level and is joined by road parallel drains. D/s of the road the channel appears to be a cut drain which takes the flow to the Truim main channel. No significant issues were identified at this crossing.









Legend

General
- Crossing location

Solid Geology
- Gaick Psammite Formation - Psammite

Drift Geology
- Peat
- Glaciofluvial Ice Contact Deposits
- Gaick Plateau Moraine Formation
- Hummocky Glacial Deposits
- Ardverikie Till Formation - Diamicton
- Glaciofluvial Sheet Deposits
- Alluvium
- River Terrace Deposits
- Alluvial Fan Deposits
- Head
- Talus - Rock Fragments
- Talus Cone

Environmental Designations
- Special Site of Scientific Interest
- Special Area of Conservation
- Special Protection Area

Morphological Pressures
- Road Bridge
- Track/Footbridge
- Culvert
- Cascade
- Step in Bed
- Catchpit
- Dam or Weir
- Abstraction Location
- Drainage Ditch
- Power Lines

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TRANSPORT SCOTLAND
A9 DUALLING PERTH TO INVERNESS

PROJECT 8 DALWHINNIE TO CRUBENMORE EIA

Drawing 11.4.3.1 Catchment 78-79 Catchment Overview

DESIGN:	DRAWN:	CHK:	APP:
EL	EV	EL	EL

DATE: 20/07/2017

PROJ: 495298

DWG: A9P08-CFJ-EWE-X_ZZZZZ_ZZ-DR-EN-0001

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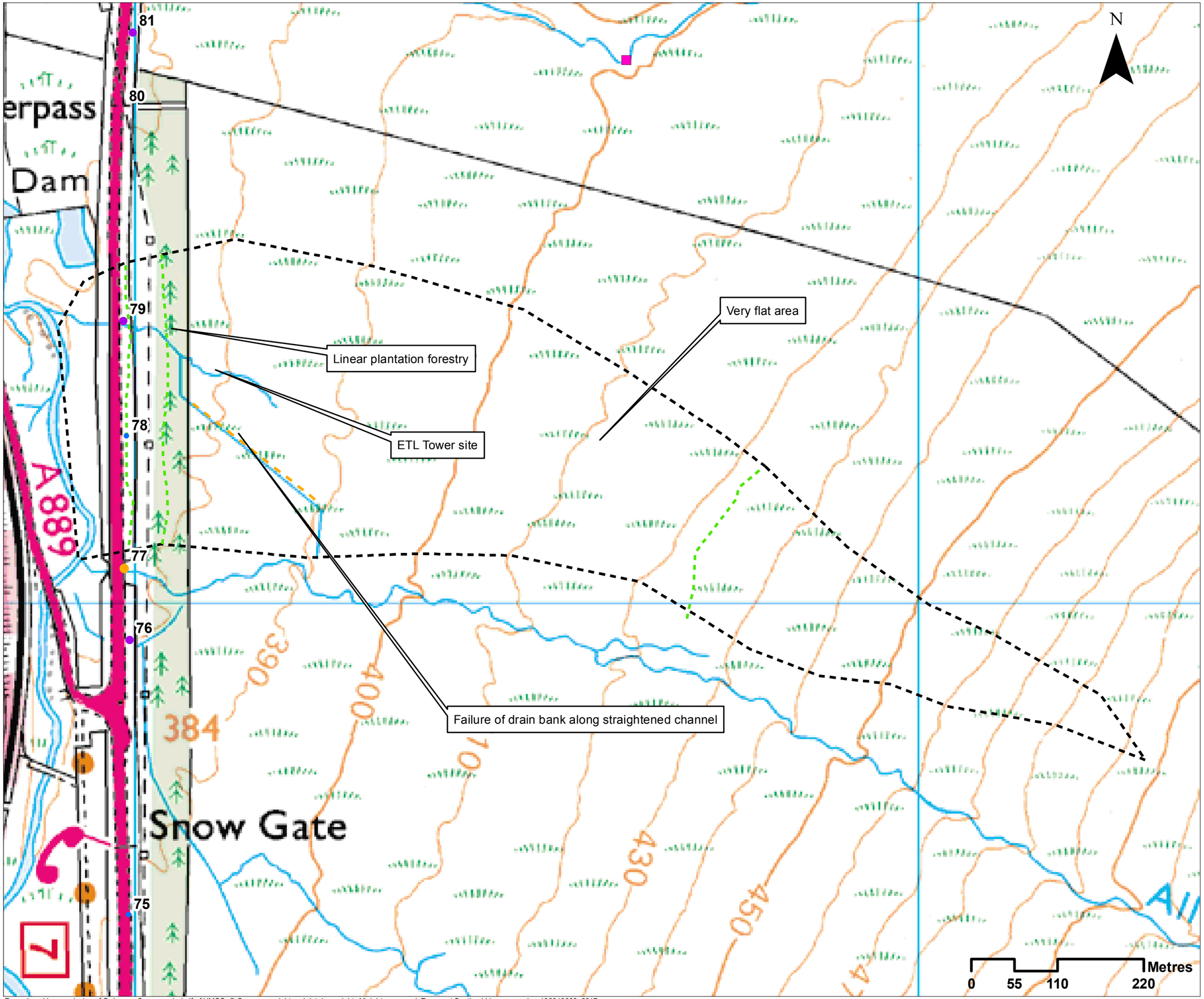

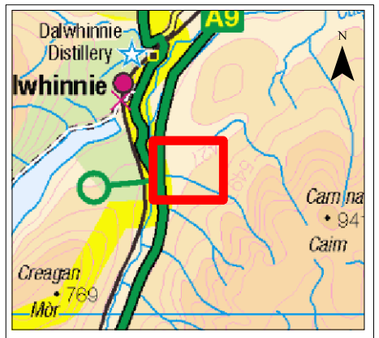

Legend

- Major crossing
- Minor crossing
- Other crossing
- Unvegetated bar
- Break in slope
- Potential valley side erosion
- Crossing catchment

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PROJECT 8 DALWHINNIE TO CRUBENMORE EIA

DRAWING 11.4.3.2.
Catchment 78 and 79 Baseline Assessment

DESIGN:	DRAWN:	CHK:	APP:
EL	EL	AB	EL

DATE: 11/07/2017

PROJ: 495298

DWG: A9P08-CFJ-EWE-X_ZZZZZ_ZZ-DR-EN-0002

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Annex 11.4.3 - Hydromorphological Catchment Assessment - 81

Catchment No.	81
Catchment Name	-

Channel Nature	Nature of water course	Natural
	Size of water course	Minor

Quantitative Spatial Elements	Catchment Area (km^2)	0.4
	Average slope in catchment (°)	5
	% Catchment over 750m (for snow melt risk)	0

WFD classification	Water, flows and levels	Good
	Physical condition	Good
	Overall ecological status	Good

Geology	Majority Bedrock (see Drawing 11.4.3.1 a and b Catchment 81)	Gaick Psammite formation-Psammite	resistant to weathering, impermeable
	Is an alluvial fan present at or near the crossing?	No	

Environmental designations (see Drawing 11.4.3.1 c, Catchment 81)	Ramsar	No	
	SAC	Yes	**Drumochter Hills** - Acidic scree, alpine and subalpine heaths, blanket bog, dry heaths, montane acid grasslands, mountain willow scrub, plants in crevices on acid rocks, species-rich grassland with mat-grass in upland areas, tall herb communities, wet heathland with cross-leaved heath.
	SPA	Yes	**Drumochter Hills -** Dotterel breeding, merlin breeding
	SSSI	Yes	**Drumochter Hills -** Breeding bird assemblage, fluvial geomorphology of Scotland, montane assemblage, vascular plant assemblage

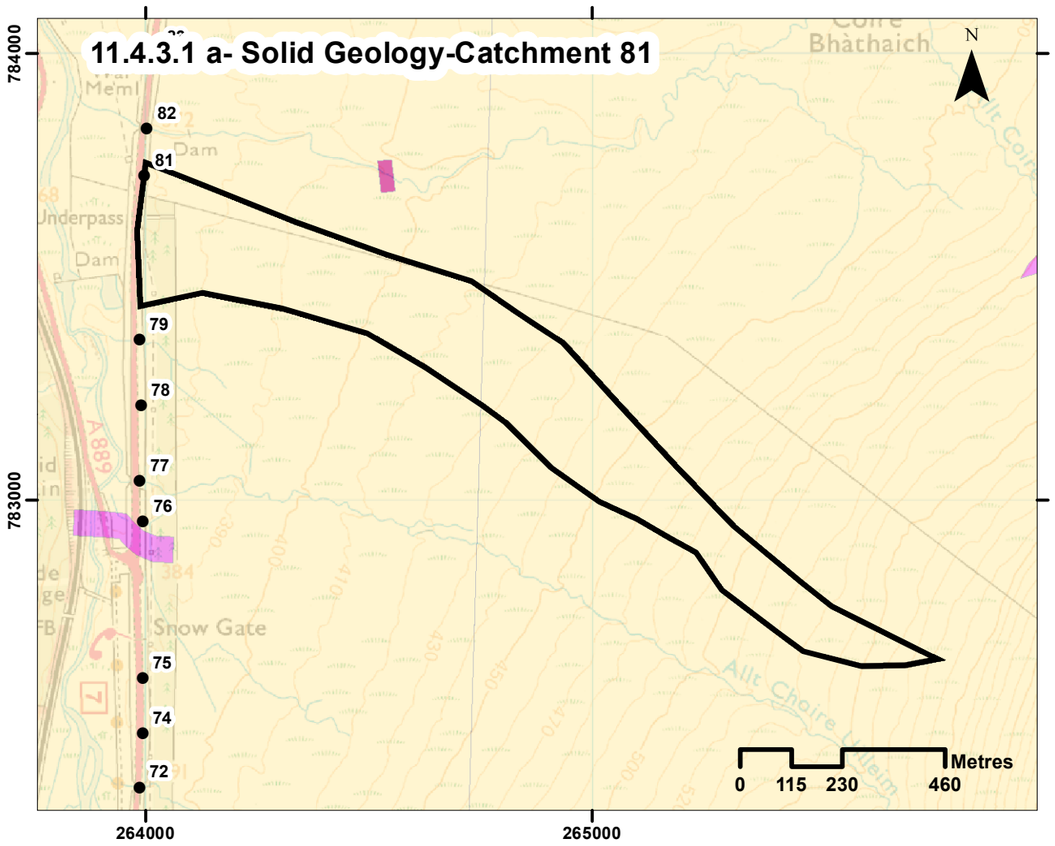
Sediment source and supply - Catchment Scale	Changes in slope and channel confinement	See Drawing 11.4.3.2, Catchment 81	
	Is peat present in the catchment	Yes	
	Is there a bog burst risk	No	
	Current valley side or terrace erosion	No	
	Potential valley side or terrace erosion	No	
	Hill slope failures (including peat slides and debris flows and slides)	No	
	Hill slope failures coupled to channel	No	
	Vertical incision present in catchment	No	
	Bank erosion/lateral migration	Yes	
	Unvegetated bars	No	
	Wooded/forested areas in catchment	Yes	Linear plantation forestry
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 81)	Yes	ETL tower and access track
	Comment on sediment source potential in catchment	No obvious major sources, except for ETL construction. Possibly eroded and cut peat which might produce fines in upper catchment	
	Comment on sediment supply potential to crossing	Limited	

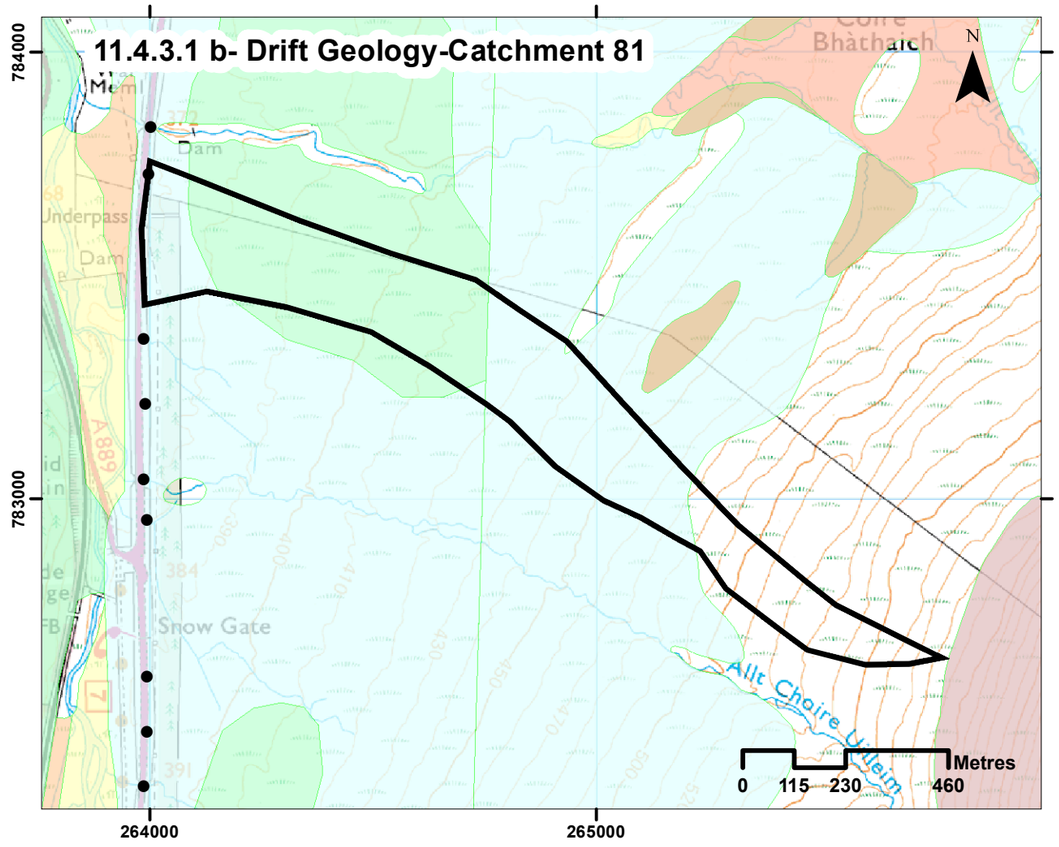
Morphology and Process-Reach upstream of crossing	Channel morphology	Plane bed	
	Predominant sediment size	Fine	
	Unvegetated bars	No	
	Vertical incision	Low	
	Deposition	Low	
	Lateral migration/bank erosion	Low	
	Presence and nature of infrastructure (Map 1d)	Yes	ETL tower and construction track
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 81)	None	
	Channel realignment	Yes	Diversion to small tributary channel

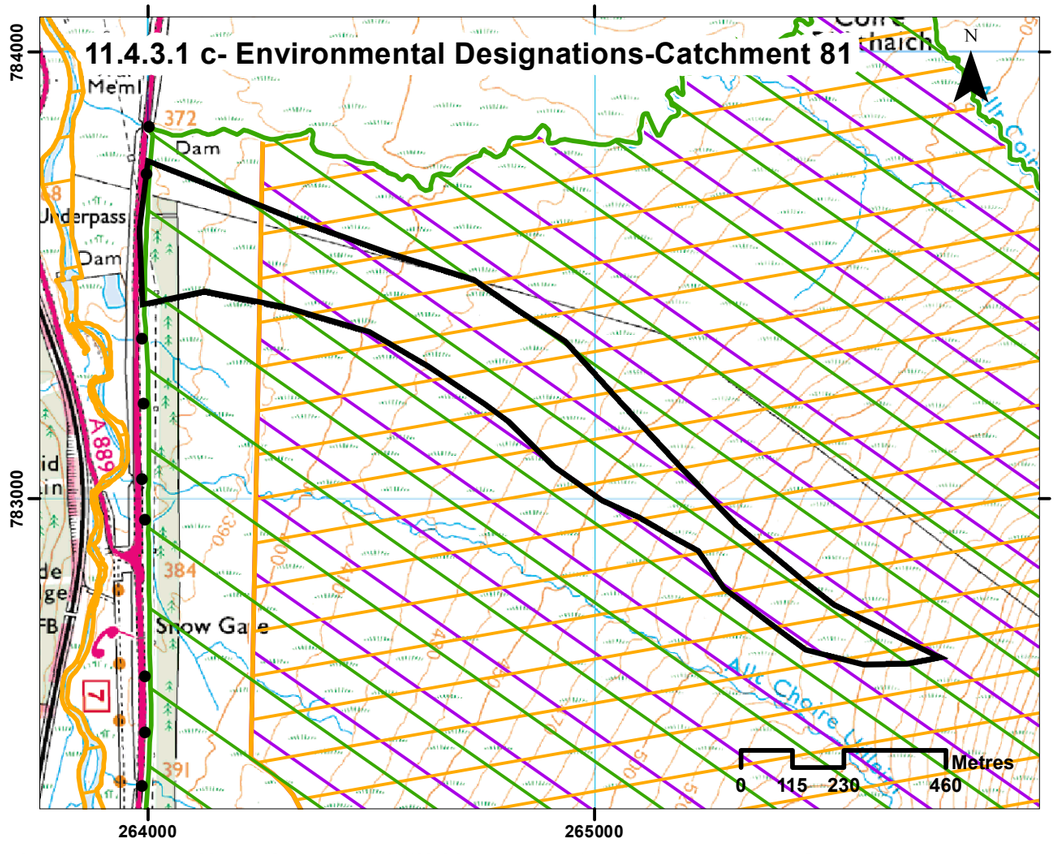
Morphology and Process-At crossing	Channel morphology	Engineered	
	Predominant sediment size	None showing - standing water in culvert	
	Estimated discharge at 1:200 event (m^3/s)	1.6	
	Unvegetated bars	No	
	Vertical incision	None	
	Deposition	None	
	Lateral migration/bank erosion	None	
	Damaged/unstable drains or armouring	No	

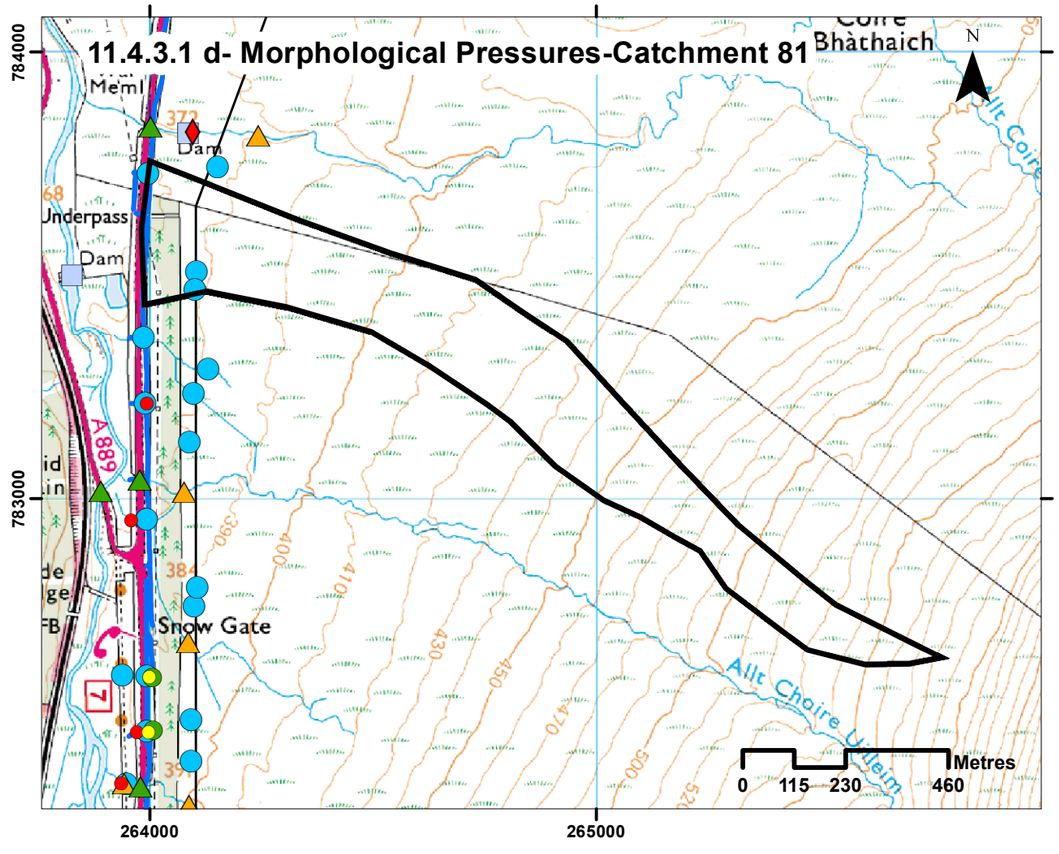
Morphology and Process-Reach downstream of crossing	Channel morphology	Plane bed	
	Predominant sediment size	Not visible	
	Unvegetated bars	No	
	Vertical incision	Low	
	Deposition	Low	
	Lateral migration/bank erosion	Low	
	Presence and nature of infrastructure (Map 1d)	No	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 81)	No	
	Channel realignment	Yes	Channel taken further north, then right angle turn to go west under road. FORMER CHANNEL VISIBLE D/S OF ROAD IN AERIAL PHOTOS.

Summary behaviour	Limited activity but the channel has been substantially realigned. Drains have been cut u/s of the road and d/s of the road the former channel has been completely abandoned. Historic mapping indicates it was previously a more substantial channel and there is evident for this in the lower reaches. Worth investigating to see if a more natural channel can be reinstated, but unlikely to be realistic as much of upslope drainage has been altered.









Legend

General
- Crossing location

Solid Geology
- Gaick Psammite Formation - Psammite

Drift Geology
- Peat
- Glaciofluvial Ice Contact Deposits
- Gaick Plateau Moraine Formation
- Hummocky Glacial Deposits
- Ardverikie Till Formation - Diamicton
- Glaciofluvial Sheet Deposits
- Alluvium
- River Terrace Deposits
- Alluvial Fan Deposits
- Head
- Talus - Rock Fragments
- Talus Cone

Environmental Designations
- Special Site of Scientific Interest
- Special Area of Conservation
- Special Protection Area

Morphological Pressures
- Road Bridge
- Track/Footbridge
- Culvert
- Cascade
- Step in Bed
- Catchpit
- Dam or Weir
- Abstraction Location
- Drainage Ditch
- Power Lines

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TRANSPORT SCOTLAND
A9 DUALLING PERTH TO INVERNESS

PROJECT 8 DALWHINNIE TO CRUBENMORE EIA

Drawing 11.4.3.1 Catchment 81 Catchment Overview

DESIGN:	DRAWN:	CHK:	APP:
EL	EV	EL	EL

DATE: 20/07/2017

PROJ: 495298

DWG: A9P08-CFJ-EWE-X_ZZZZZ_ZZ-DR-EN-0001

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1 of 1	C01	A3

Ruighe Coire Bhàthaich

N

War Meml

Dam

Underpass

Dam

Snow Gate

A889

Allt Coire

Allt Choire Uilleim

83
82
81
80
79
78
77
76
75
74
73
72

362
372
368
384
391

390
400
410
430
450
470
500
520

Channel diverted

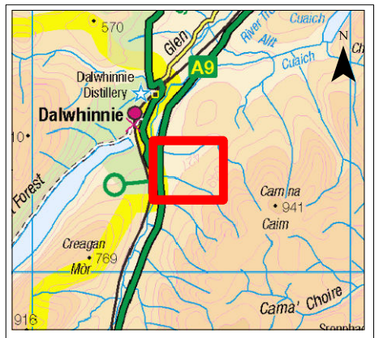
ETL tower

ETL construction track

Steep upper catchment

Many small channels moving sediment and water towards the crossing

0 80 160 320 Metres



Legend

- Major crossing
- Minor crossing
- Other crossing
- Break in slope
- Original channel
- Crossing catchment

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TRANSPORT SCOTLAND

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PROJECT 8 DALWHINNIE TO CRUBENMORE EIA

DRAWING 11.4.3.2.
Catchment 81 Baseline Assessment

DESIGN:	DRAWN:	CHK:	APP:
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DATE: 11/07/2017

PROJ: 495298

DWG: A9P08-CFJ-EWE-X_ZZZZZ_ZZ-DR-EN-0002

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Annex 11.4.3 - Hydromorphological Catchment Assessment - 82

Catchment No.	82
Catchment Name	Allt Coire Bhathaich

Channel Nature	Nature of water course	Natural
	Size of water course	Major

Quantitative Spatial Elements	Catchment Area (km^2)	4.9
	Average slope in catchment (°)	10.2
	% Catchment over 750m (for snow melt risk)	19.2

WFD classification	Water, flows and levels	Good
	Physical condition	Good
	Overall ecological status	Good

Geology	Majority Bedrock (see Drawing 11.4.3.1 a and b Catchment 82)	Gaick Psammite formation-Psammite	resistant to weathering, impermeable
	Is an alluvial fan present at or near the crossing?	Alluvial fan is present upstream	

Environmental designations (see Drawing 11.4.3.1 c, Catchment 82)	Ramsar	No	
	SAC	Yes	**Drumochter Hills** - Acidic scree, alpine and subalpine heaths, blanket bog, dry heaths, montane acid grasslands, mountain willow scrub, plants in crevices on acid rocks, species-rich grassland with mat-grass in upland areas, tall herb communities, wet heathland with cross-leaved heath.
	SPA	Yes	**Drumochter Hills** - Dotterel breeding, merlin breeding
	SSSI	Yes	**Drumochter Hills** - Breeding bird assemblage, fluvial geomorphology of Scotland, montane assemblage, vascular plant assemblage

Sediment source and supply - Catchment Scale	Changes in slope and channel confinement	See Drawing 11.4.3.2, Catchment 82	
	Is peat present in the catchment	Yes	Large peat deposit at source of stream
	Is there a bog burst risk	Yes	
	Current valley side or terrace erosion	No	
	Potential valley side or terrace erosion	No	
	Hill slope failures (including peat slides and debris flows and slides)	Yes	Sediment source
	Hill slope failures coupled to channel	Yes	Sediment source
	Vertical incision present in catchment	Some in upper catchment	Sediment source
	Bank erosion/lateral migration	Some	Sediment source
	Unvegetated bars	Yes	Some bars of available sediment in the channel
	Wooded/forested areas in catchment	None	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 82)	None	
	Comment on sediment source potential in catchment	Sediment sources tend to be in the upper catchment but are delivered to the channel Does not appear to be excessive sediment available from the catchment	
	Comment on sediment supply potential to crossing	Sediment transported along the channel from the upper catchment Channel confined in valley bottom so will transport sediment to crossing	

Morphology and Process-Reach upstream of crossing	Channel morphology	Cascade	
	Predominant sediment size	Bedrock, Boulders, Cobbles	
	Unvegetated bars	Yes	Available sediment to the crossing
	Vertical incision	None	
	Deposition	High	Large sediment available upstream of the crossing
	Lateral migration/bank erosion	Low	Local sediment supply to crossing
	Presence and nature of infrastructure (Map 1d)	Dam	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 82)	Fixing bed level upstream	
	Channel realignment	None	

Morphology and Process-At crossing	Channel morphology	Plane bed	
	Predominant sediment size	Boulders/Cobbles	
	Estimated discharge at 1:200 event (m^3/s)	20.8	
	Unvegetated bars	Yes	Sediment available
	Vertical incision	None	
	Deposition	Medium	
	Lateral migration/bank erosion	Low	
	Damaged/unstable drains or armouring	None	

Morphology and Process-Reach downstream of crossing	Channel morphology	Plane bed	
	Predominant sediment size	Boulders/Cobbles	
	Unvegetated bars	None	
	Vertical incision	None	
	Deposition	Low	
	Lateral migration/bank erosion	Medium	
	Presence and nature of infrastructure (Map 1d)	None	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 82)	N/A	
	Channel realignment	None	

Summary behaviour	Sediment supply from upper catchment is transported to the crossing, but the crossing is sufficiently far enough from the sediment sources to reduce the rate of supply. The Dam upstream of the crossing reduces downstream sediment supply by regulating flows as well as holding sediment behind it Risk of deposition and potentially lateral change. Low risk of incision

Photograph 11.4.3.45 –Downstream

Photograph 11.4.3.46 – Downstream-Plane bed morphology

Photograph 11.4.3.47 -Looking Upstream, low flow channel in culvert

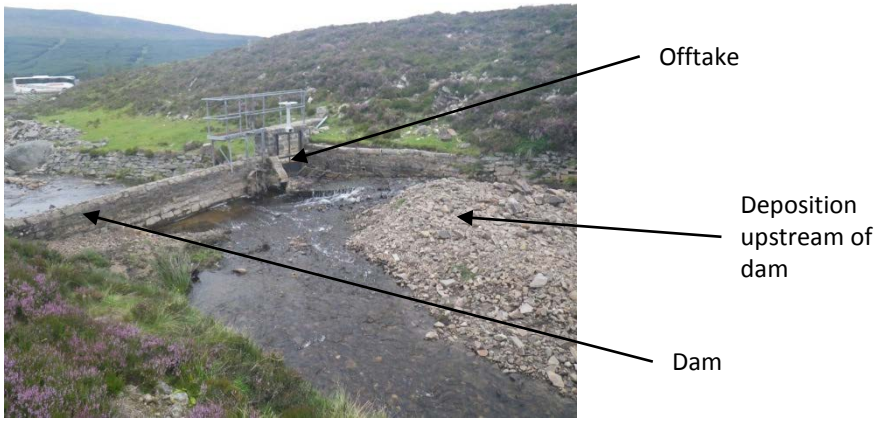
Photograph 11.4.3.48 - Looking upstream, confined channel

Photograph 11.4.3.49- Upstream to dam and offtake

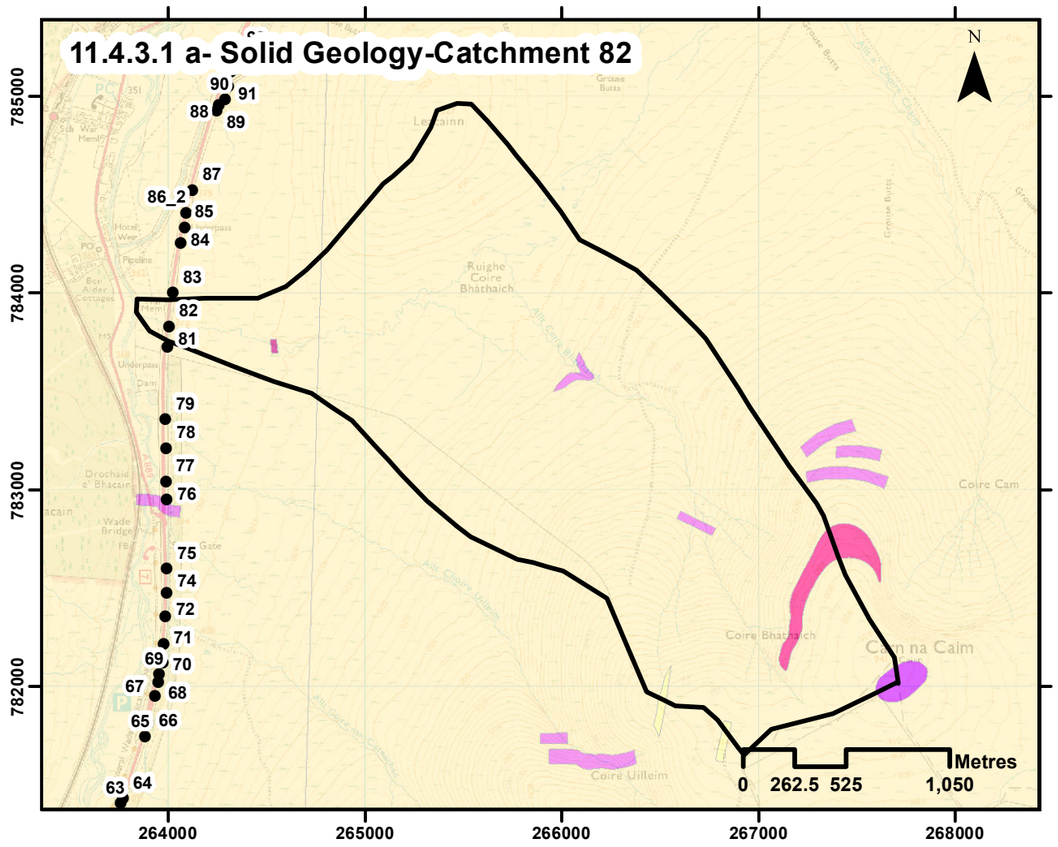
Photograph 11.4.3.50 - Downstream to crossing

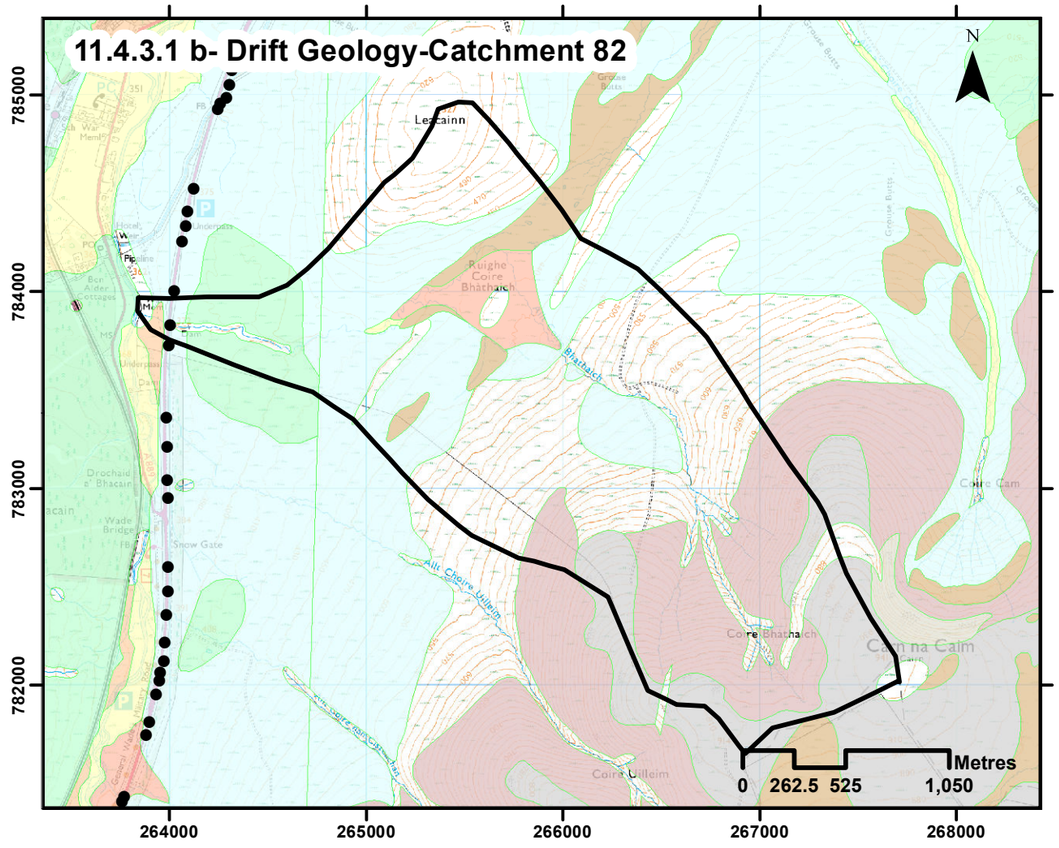
Photograph 11.4.3.51- Dam and offtake

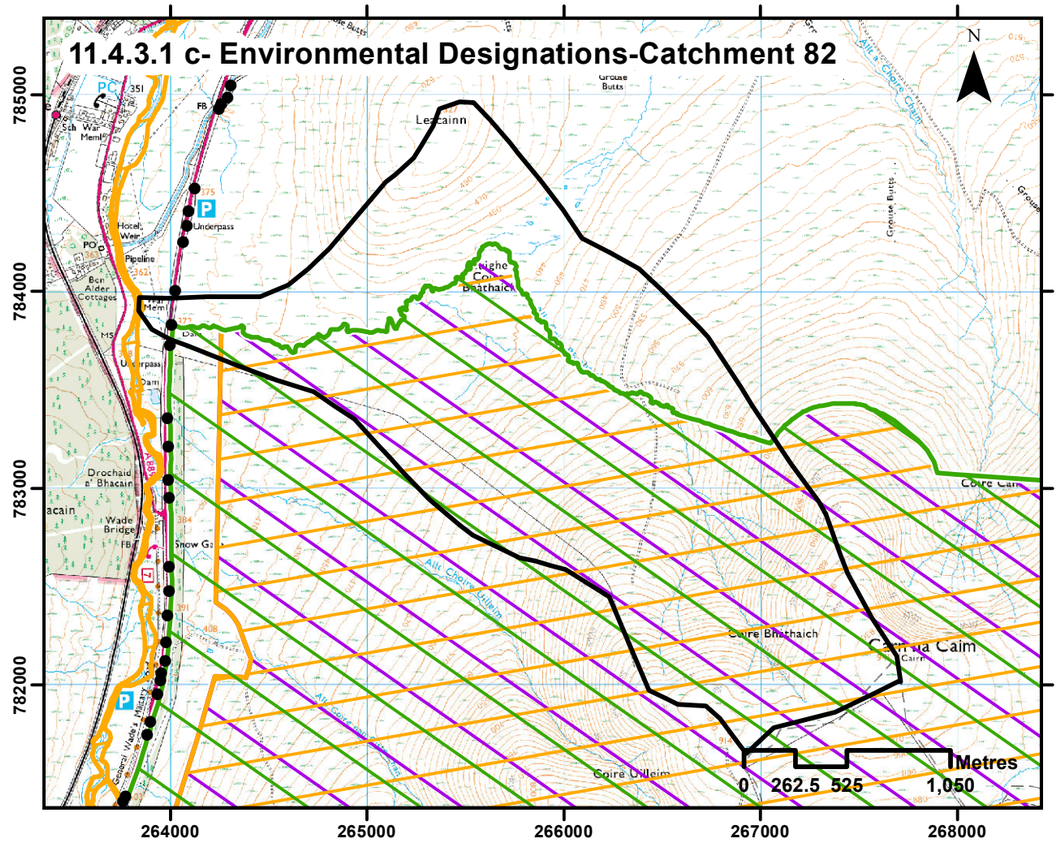
Photograph 11.4.3.52 - Confined channel by valley sides

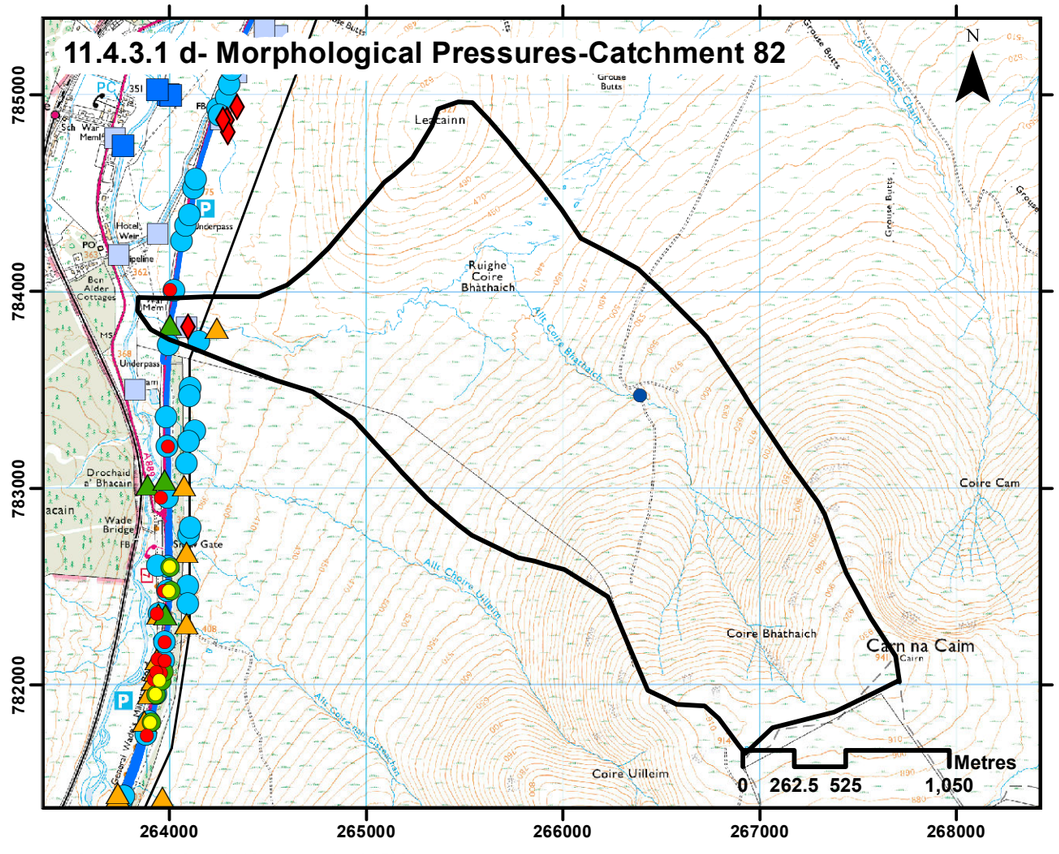


Photograph 11.4.3.53-Depostion upstream of dam









Legend

General
- Crossing Location
- Catchment Area

Solid Geology
- Gaick Psammite Formation - Psammite
- Scottish Highland Ordovician Minor Intrusion Suite - Pegmatite

Drift Geology
- Peat
- Glaciofluvial Ice Contact Deposits
- Gaick Plateau Moraine Formation
- Hummocky Glacial Deposits
- Ardverikie Till Formation - Diamicton
- Glaciofluvial Sheet Deposits
- Alluvium
- River Terrace Deposits
- Alluvial Fan Deposits
- Head
- Talus - Rock Fragments
- Talus Cone

Environmental Designations
- Special Site of Scientific Interest
- Special Area of Conservation
- Special Protection Area

Morphological Pressures
- Road Bridge
- Track/Footbridge
- Culvert
- Cascade
- Step in Bed
- Catchpit
- Ford
- Dam or Weir
- Discharge Location
- Abstraction Location
- Drainage Ditch
- Power Lines

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PROJECT 8 DALWHINNIE TO CRUBENMORE EIA

Drawing 11.4.3.1 Catchment 82 Catchment Overview

DESIGN:	DRAWN:	CHK:	APP:
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DATE: 12/07/2017

PROJ: 495298

DWG: A9P08-CFJ-EWE-X_ZZZZZ_ZZ-DR-EN-0001

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1 of 1	C01	A3

Area of deposition where slope reduces

Sediment source in steep upper catchment

N

Metres
0 205 410 820

Legend

- Major crossing
- Minor crossing
- Other crossing
- Peat
- Coupled debris flow
- Debris flow
- Valley side erosion
- Unvegetated bar
- Break in slope
- Terrace
- Crossing catchment

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PROJECT 8 DALWHINNIE TO CRUBENMORE EIA

DRAWING 11.4.3.2.
Catchment 82 Baseline Assessment

DESIGN:	DRAWN:	CHK:	APP:
EL	EL	AB	EL

DATE: 11/07/2017

PROJ: 495298

DWG: A9P08-CFJ-EWE-X_ZZZZZ_ZZ-DR-EN-0002

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1 OF 1	C01	A3

Annex 11.4.3 - Hydromorphological Catchment Assessment - 83-87

Catchment No.	83-87
Catchment Name	-

Channel Nature	Nature of water course	Drain
	Size of water course	Other

Quantitative Spatial Elements	Catchment Area (km^2)	No Data
	Average slope in catchment (°)	No Data
	% Catchment over 750m (for snow melt risk)	No Data

WFD classification	Water, flows and levels	Good
	Physical condition	Good
	Overall ecological status	Good

Geology	Majority Bedrock (see Drawing 11.4.3.1 a and b Catchment 83-87)	Gaick Psammite formation-Psammite	resistant to weathering, impermeable
	Is an alluvial fan present at or near the crossing?	No	

Environmental designations (see Drawing 11.4.3.1 c, Catchment 83-87)	Ramsar	No	
	SAC	No	
	SPA	No	
	SSSI	No	

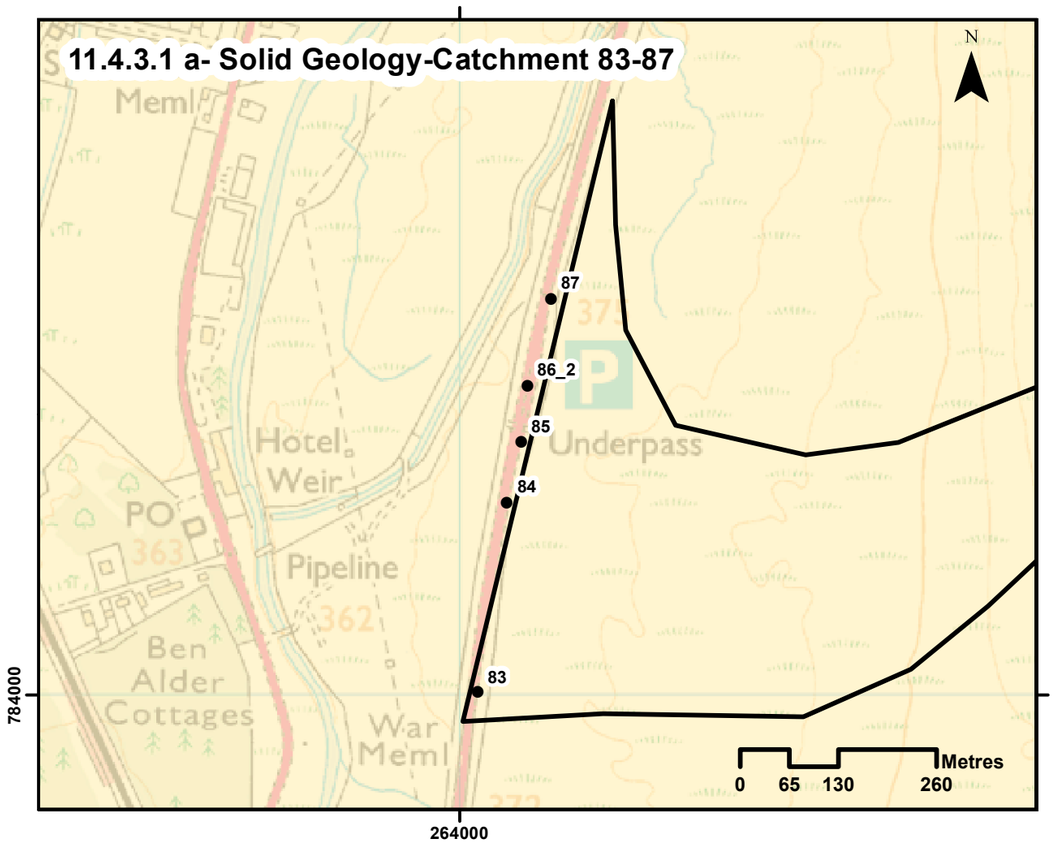
Sediment source and supply - Catchment Scale	Changes in slope and channel confinement	See Drawing 11.4.3.2, Catchment 83-87	
	Is peat present in the catchment	No	
	Is there a bog burst risk	No	
	Current valley side or terrace erosion	No	
	Potential valley side or terrace erosion	No	
	Hill slope failures (including peat slides and debris flows and slides)	No	
	Hill slope failures coupled to channel	No	
	Vertical incision present in catchment	No	
	Bank erosion/lateral migration	No	
	Unvegetated bars	No	
	Wooded/forested areas in catchment	No	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 83-87)	No	
	Comment on sediment source potential in catchment	Fines, organics	
	Comment on sediment supply potential to crossing	Fines, organics	

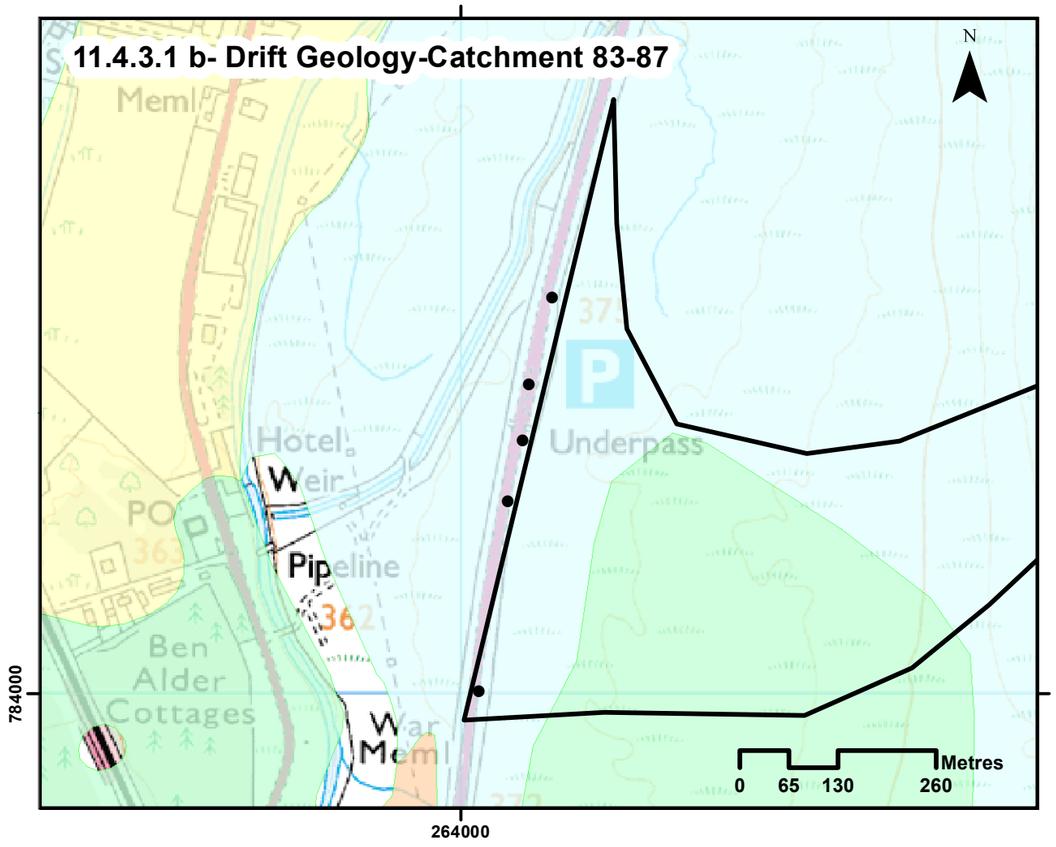
Morphology and Process-Reach upstream of crossing	Channel morphology	Plane bed	
	Predominant sediment size	Fine, organic	
	Unvegetated bars	No	
	Vertical incision	High	
	Deposition	None	
	Lateral migration/bank erosion	None	
	Presence and nature of infrastructure (Map 1d)	None	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 83-87)	None	
	Channel realignment	New channels	

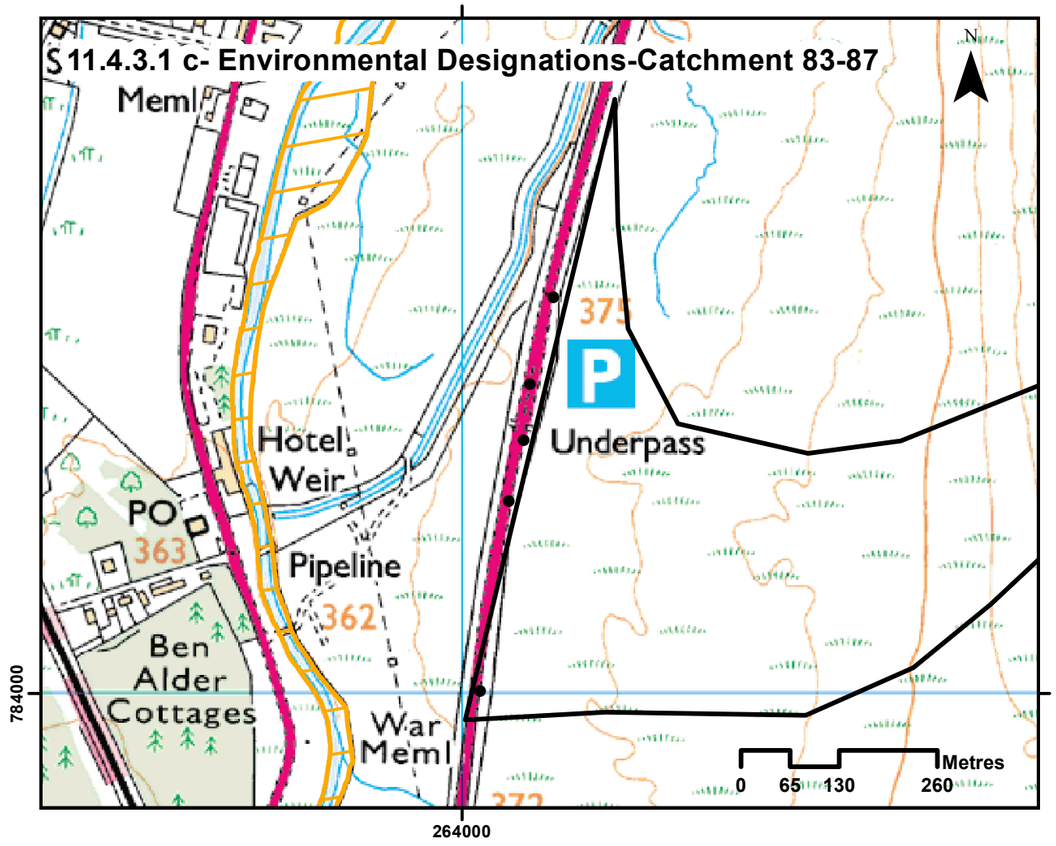
Morphology and Process-At crossing	Channel morphology	Engineered	
	Predominant sediment size	Fines	
	Estimated discharge at 1:200 event (m^3/s)	No data	
	Unvegetated bars	No	
	Vertical incision	None	
	Deposition	High	
	Lateral migration/bank erosion	Medium	Evidence of erosion at outflow undermining bank armouring
	Damaged/unstable drains or armouring	Yes	Evidence of erosion at outflow undermining bank armouring

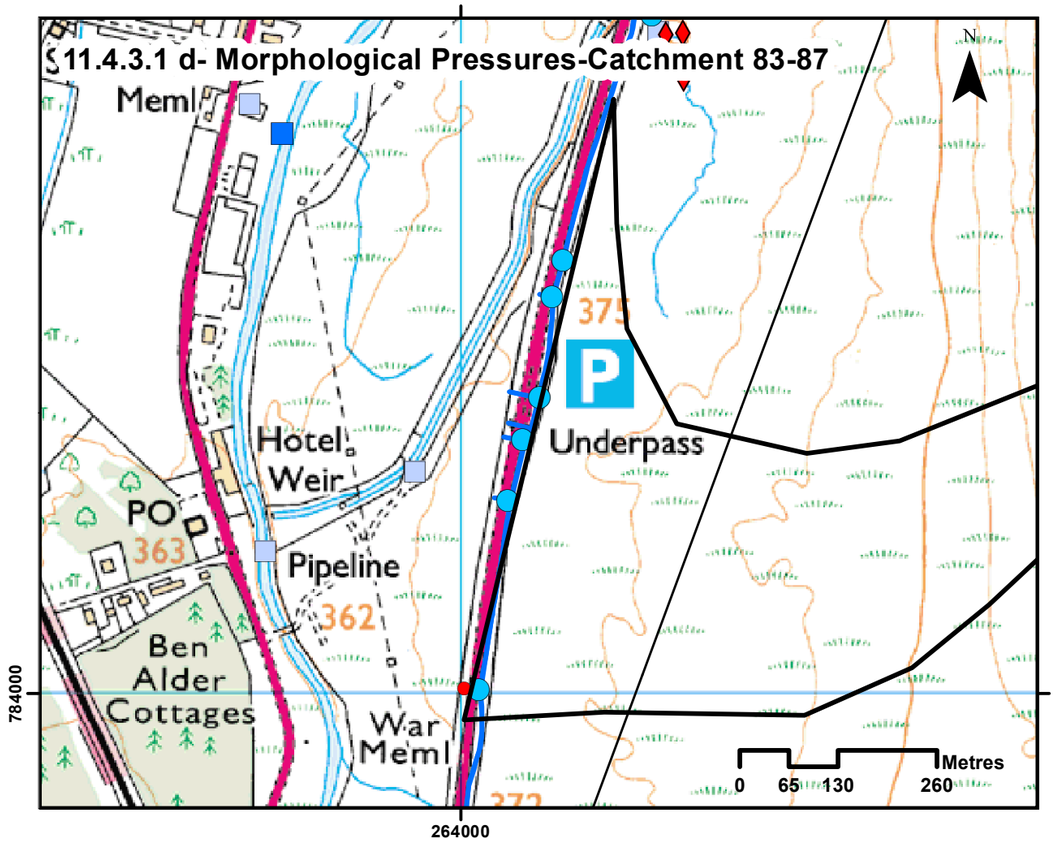
Morphology and Process-Reach downstream of crossing	Channel morphology	Plane bed	
	Predominant sediment size	Fine	
	Unvegetated bars	None	
	Vertical incision	None	
	Deposition	High	
	Lateral migration/bank erosion	None	
	Presence and nature of infrastructure (Map 1d)	None	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 83-87)	None	
	Channel realignment	New channels	No channel previously there

Summary behaviour	83- Very slow moving water in channel allowing fines to be deposited downstream as it crosses the Truim floodplain. Consequently vegetation taking hold in channel. 87 Low (but some)potential for damage to infrastructure, as channel forms upstream of crossing. Potential for incision and lateral migration









Legend

General
- Crossing Location
- Catchment Area

Solid Geology
- Gaick Psammite Formation - Psammite

Drift Geology
- Peat
- Glaciofluvial Ice Contact Deposits
- Gaick Plateau Moraine Formation
- Hummocky Glacial Deposits
- Ardverikie Till Formation - Diamicton
- Glaciofluvial Sheet Deposits
- Alluvium
- River Terrace Deposits
- Alluvial Fan Deposits
- Head
- Talus - Rock Fragments
- Talus Cone

Environmental Designations
- Special Area of Conservation

Morphological Pressures
- Culvert
- Step in Bed
- Dam or Weir
- Discharge Location
- Abstraction Location
- Drainage Ditch
- Power Lines

REV	SUIT	DATE	DESCRIPTION	BY	APP

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TRANSPORT SCOTLAND
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PROJECT 8 DALWHINNIE TO CRUBENMORE EIA

Drawing 11.4.3.1 Catchment 83-87 Catchment Overview

DESIGN:	DRAWN:	CHK:	APP:
EL	EV	EL	EL

DATE: 12/07/2017

PROJ: 495298

DWG: A9P08-CFJ-EWE-X_ZZZZZ_ZZ-DR-EN-0001

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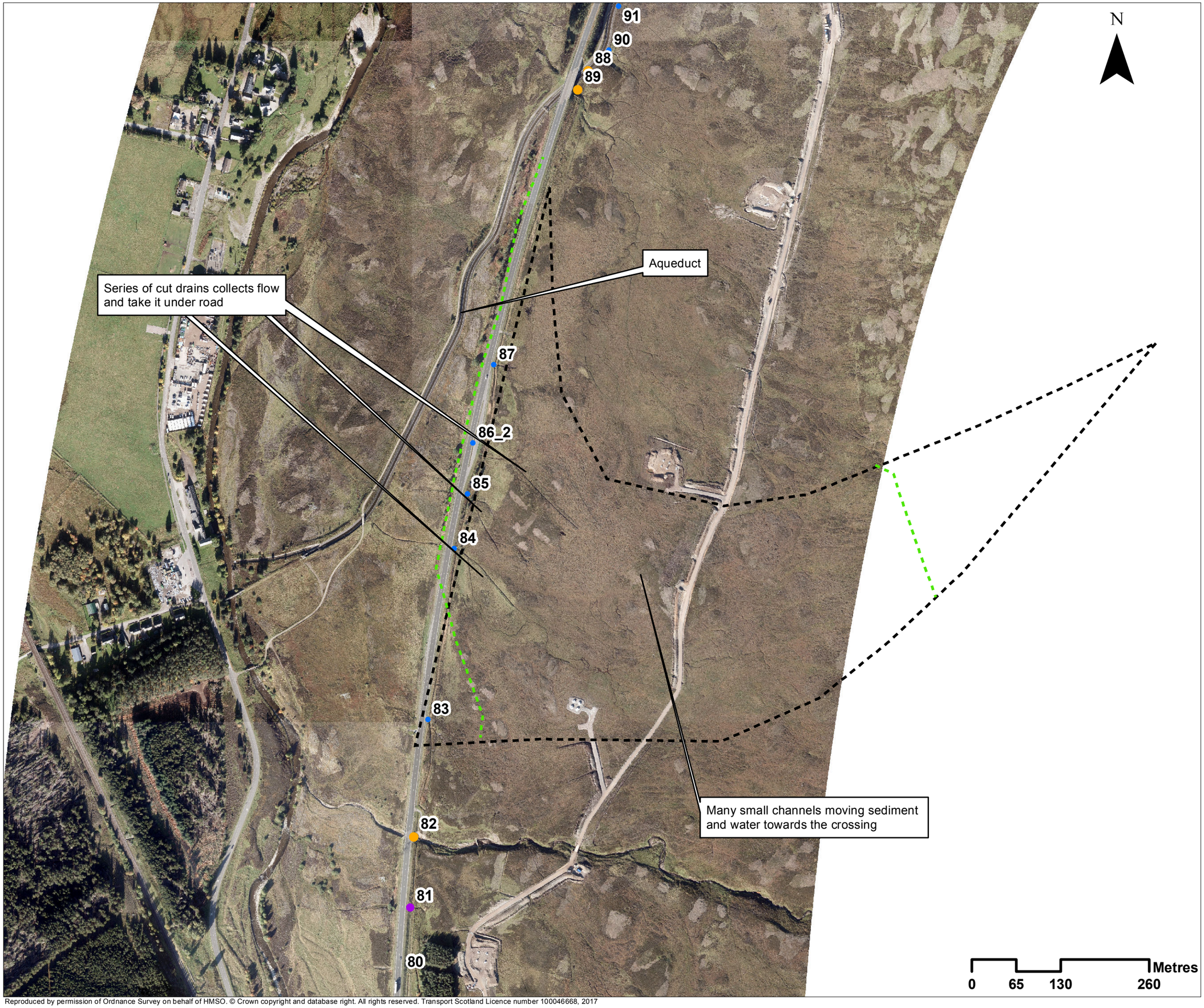

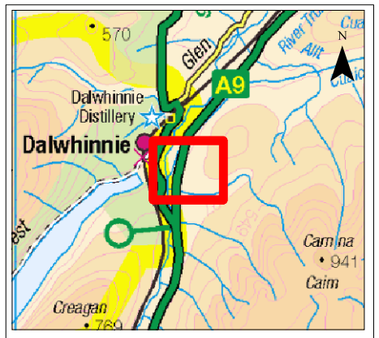

Legend

- Major crossing
- Minor crossing
- Other crossing
- Break in slope
- Crossing catchment

REV	SUIT	DATE	DESCRIPTION	BY	APP

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PROJECT 8 DALWHINNIE TO CRUBENMORE EIA

DRAWING 11.4.3.2.
Catchment 83-87 Baseline Assessment

DESIGN:	DRAWN:	CHK:	APP:
EL	EL	AB	EL

DATE: 11/07/2017

PROJ: 495298

DWG: A9P08-CFJ-EWE-X_ZZZZZ_ZZ-DR-EN-0002

SHEET:	REVISION:	SUITABILITY:
1 OF 1	C01	A3

Annex 11.4.3 - Hydromorphological Catchment Assessment - 89

Catchment No.	89
Catchment Name	-

Channel Nature	Nature of water course	Natural
	Size of water course	Major

Quantitative Spatial Elements	Catchment Area (km^2)	0.7
	Average slope in catchment (°)	7.6
	% Catchment over 750m (for snow melt risk)	0

WFD classification	Water, flows and levels	Good
	Physical condition	Good
	Overall ecological status	Good

Geology	Majority Bedrock (see Drawing 11.4.3.1 a and b Catchment 89)	Gaick Psammite formation-Psammite	resistant to weathering, impermeable
	Is an alluvial fan present at or near the crossing?	No	

Environmental designations (see Drawing 11.4.3.1 c, Catchment 89)	Ramsar	No	
	SAC	Yes	River Spey - Atlantic salmon, freshwater pearl mussel, otter, sea lamprey **NB only very furthest d/s extremity.**
	SPA	No	
	SSSI	No	

Sediment source and supply - Catchment Scale	Changes in slope and channel confinement	See Drawing 11.4.3.2, Catchment 89	
	Is peat present in the catchment	Yes	On hilltop - evidence of pool-hummock morphology. Also possible peat accumulation on lower slopes
	Is there a bog burst risk	Yes	But unlikely. Watershed mire very distant from watercourse. Peat on lower slopes likely thin.
	Current valley side or terrace erosion	No	
	Potential valley side or terrace erosion	No	
	Hill slope failures (including peat slides and debris flows and slides)	No	
	Hill slope failures coupled to channel	No	
	Vertical incision present in catchment	No	
	Bank erosion/lateral migration	No	
	Unvegetated bars	No	
	Wooded/forested areas in catchment	No	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 89)	Yes	Abstraction weir for aqueduct, pipe carrying abstracted flow to aqueduct and culvert carrying abstraction pipe across watercourse after change of watercourse direction.
	Comment on sediment source potential in catchment	Moderate - some sediment deposited in a 'delta' of unvegetated gravel at the end of the drain constructed around ETL tower. ETL construction track another possible source of sediment.	
	Comment on sediment supply potential to crossing	Limited. Abstraction weir and culvert block routes.	

Morphology and Process-Reach upstream of crossing	Channel morphology	Plane bed	
	Predominant sediment size	Fine-small gravel	
	Unvegetated bars	No	
	Vertical incision	Low	Now stable
	Deposition	Low	Drape of fines
	Lateral migration/bank erosion	Low	
	Presence and nature of infrastructure (Map 1d)	Yes	See above for catchment, also aqueduct, under which watercourse flows
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 89)	Yes	Reduced flow, reduced sediment supply
	Channel realignment	No	

Morphology and Process-At crossing	Channel morphology	Engineered	
	Predominant sediment size	Gravel	
	Estimated discharge at 1:200 event (m^3/s)	3.4	
	Unvegetated bars	No	
	Vertical incision	None	
	Deposition	Low	Limited deposition of coarse sediment at culvert entrance
	Lateral migration/bank erosion	None	
	Damaged/unstable drains or armouring	No	

Morphology and Process-Reach downstream of crossing	Channel morphology	Plane bed	
	Predominant sediment size		
	Unvegetated bars	No	
	Vertical incision	Low	Some scour d/s of culvert exit and channel confined indicating previous incision but now stable
	Deposition	None	
	Lateral migration/bank erosion	None	
	Presence and nature of infrastructure (Map 1d)	No	
	Infrastructure type (see Drawing 11.4.3.1 d, Catchment 89)	No	
	Channel realignment	No	Map indicates some channel straightening, but not corroborated by aerial photography

Summary behaviour	CROSSING IS ACTUALLY UNDER THE AQUEDUCT RATHER THAN DIRECTLY UNDER THE ROAD!!! Channel was originally natural, but has had a small weir installed u/s of the aqueduct. At this weir, a pipe abstracts some of the flow to feed the aqueduct. The pipe must cross the watercourse again further downstream and does so over a two-pipe culvert, which creates another man-made restriction on flow and sediment movement. Sediment sources in the catchment are limited, although at the time the aerial photographs were taken, the ETL was being constructed further upslope and coarse sediment appears to have been deposited in a fan/delta at the d/s end of a drain for the ETL tower construction site. However this is uncoupled from the watercourse and therefore unlikely to supply sediment to the crossing. D/s of the crossing the channel is visible in aerial photographs, but is well vegetated, presumably as normal fluvial processes have been severely curtailed by flow abstraction and subsequent reduction in stream power and sediment supply.

Photograph 11.4.3.54 - Aqueduct

Dam

Photograph 11.4.3.55 - Upstream to catchment. Slope reduces before crossing

Small channel

Photograph 11.4.3.56- Channel upstream of crossing

Small scale deposition at culvert

Photograph 11.4.3.57 –Downstream to crossing entrance

Photograph 11.4.3.58 –Aqueduct (upstream)

Photograph 11.4.3.59 –Aqueduct (downstream)

Photograph 11.4.3.60- Culvert exit

Confined channel

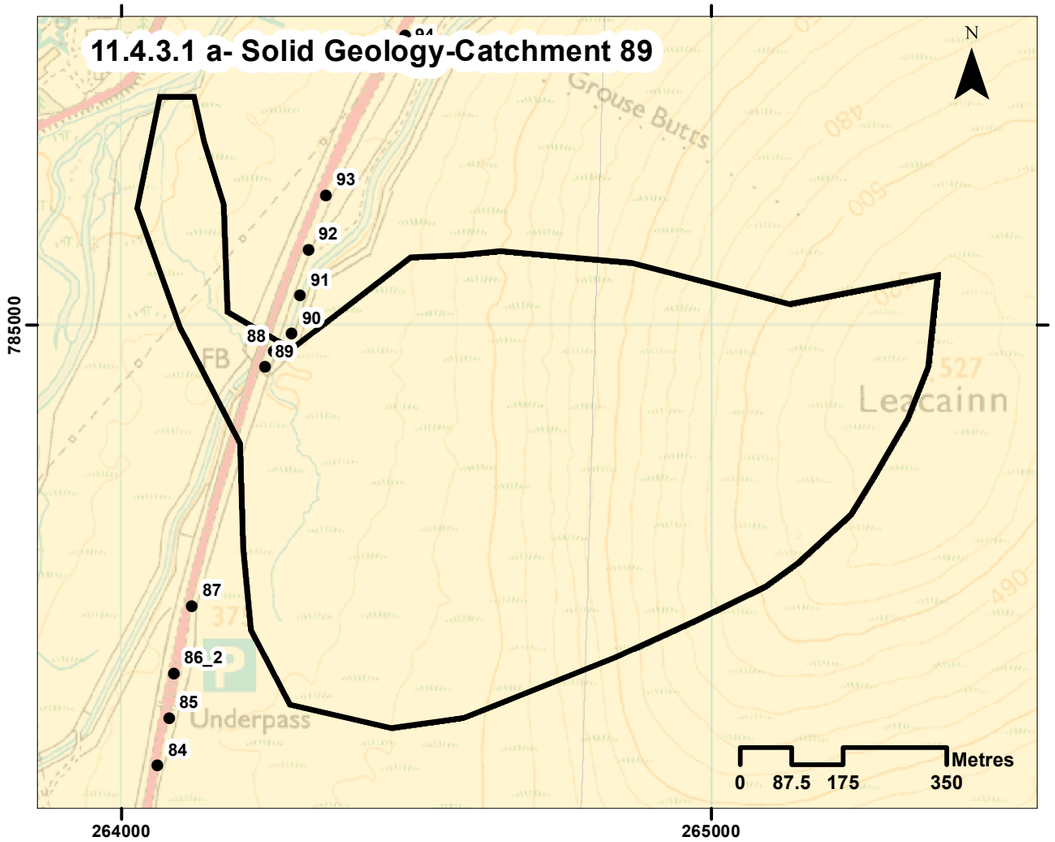
Some scour to exit of crossing

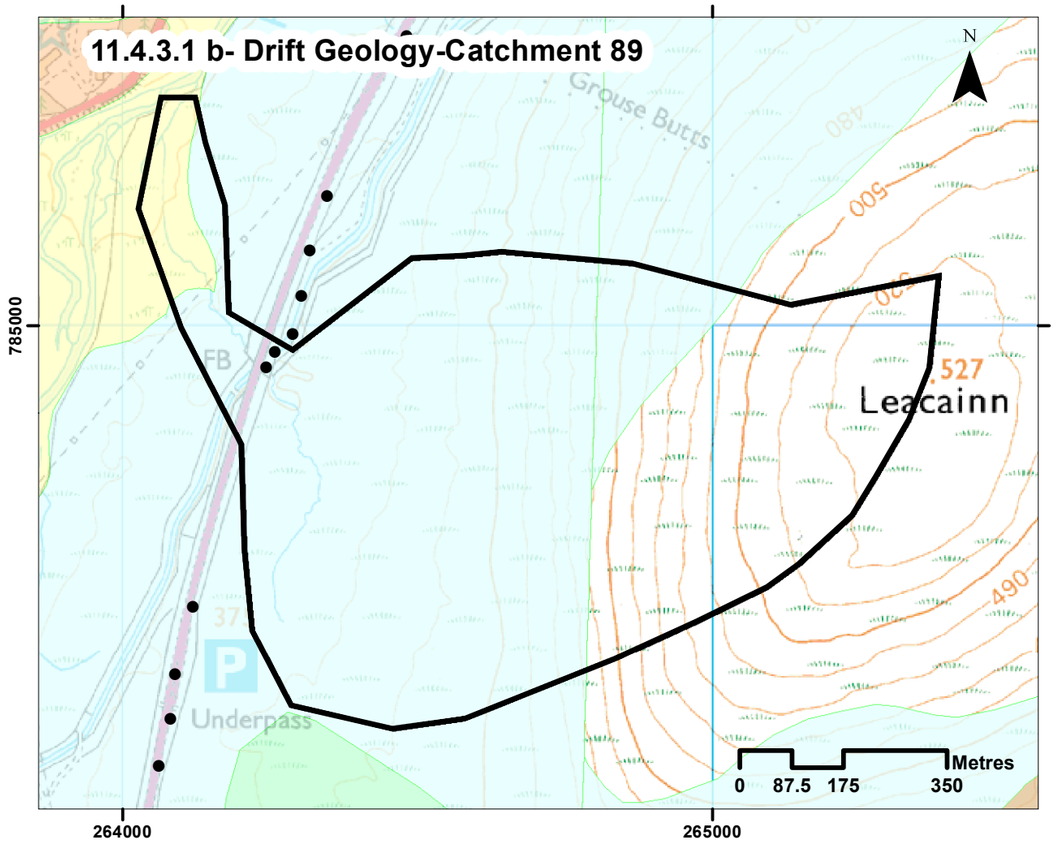
Photograph 11.4.3.61 - Downstream of crossing

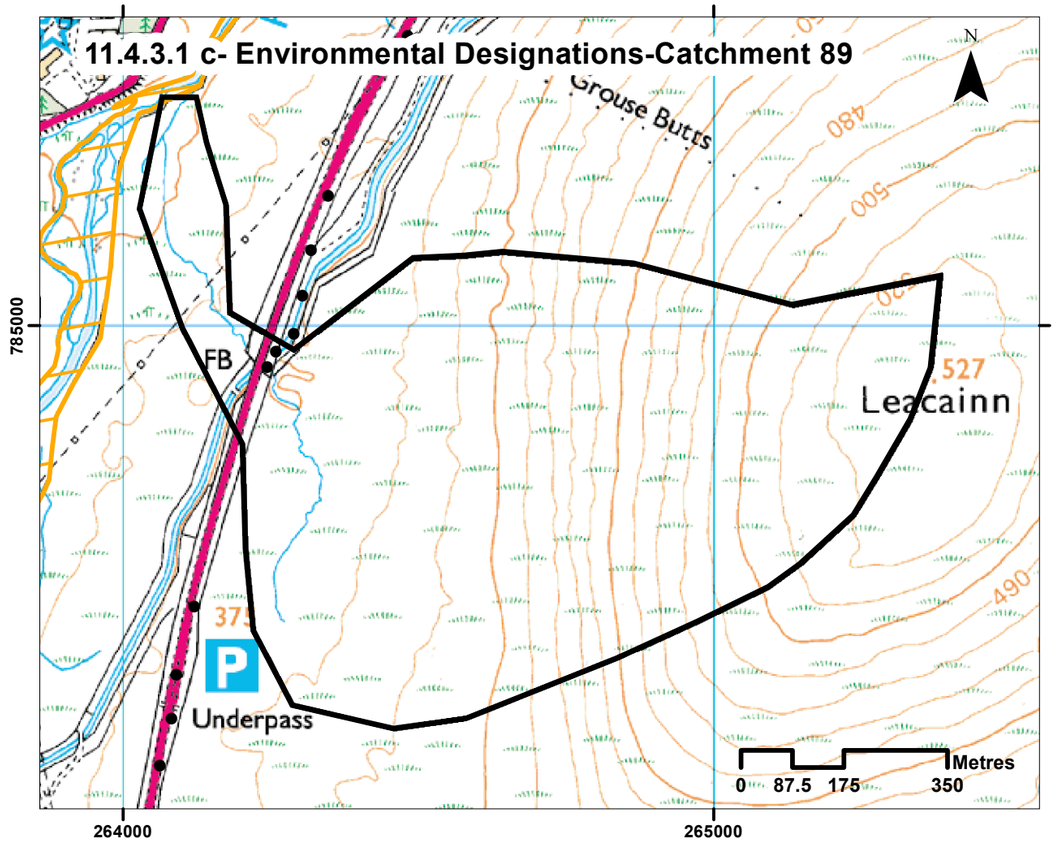
Photograph 11.4.3.62 - Steep upper catchment draining into crossing

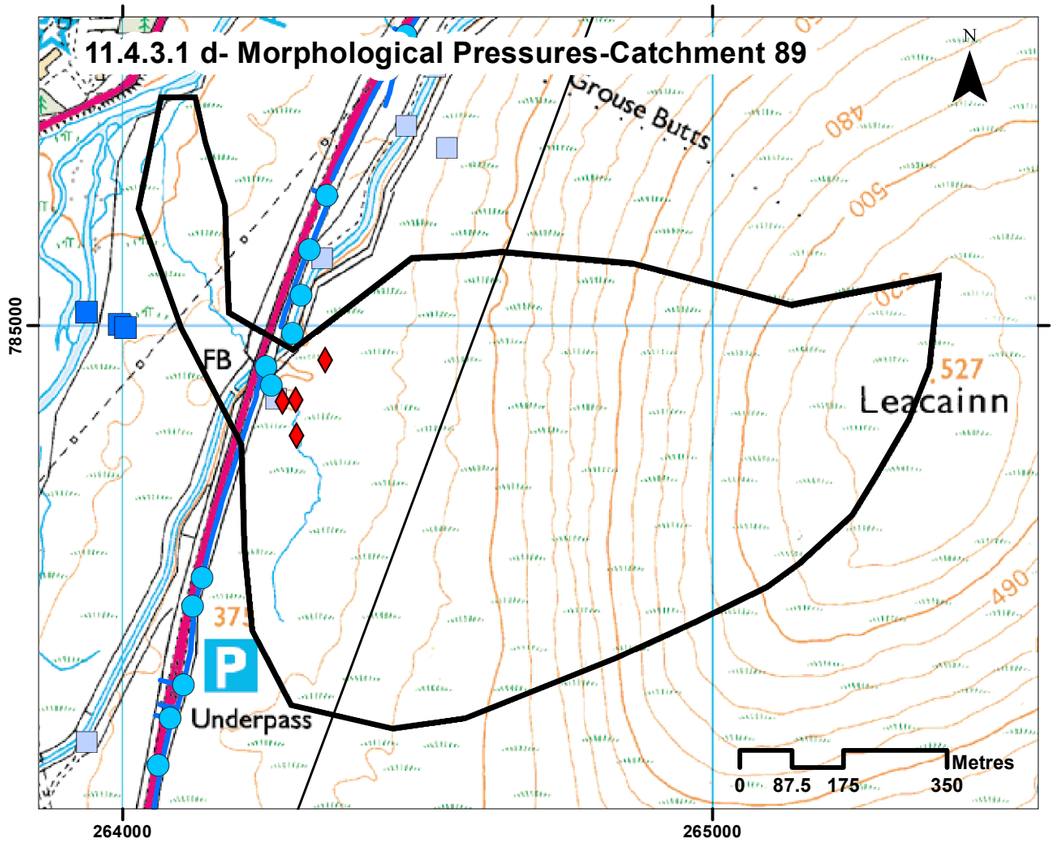
Photograph 11.4.3.64 – Gravel in bed

Photograph 11.4.3.63 -Culvert upstream of crossing









Legend

General
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PROJECT 8 DALWHINNIE TO CRUBENMORE EIA

Drawing 11.4.3.1 Catchment 89 Catchment Overview

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Aqueduct

Former channel now mostly vegetated - abstraction for aqueduct reduced flow

Delta/fan of sediment formed from drain washout resulting from construction

Steep upper catchment

Culvert under aqueduct

Dams and pipe take flow to aqueduct

ETL Construction Track

Many small channels moving sediment and water towards the crossing

94 93 92 91 90 89 88 87 86_2 85 84 83

FB FB

Grouse Butts

Leacainn

Hotel

Weir

Pipeline

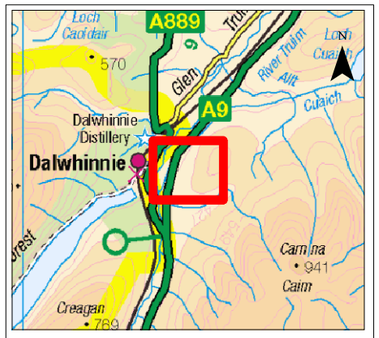
Underpass

352 351 375 362 527

450 480 500 490

N

0 70 140 280 Metres



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DRAWING 11.4.3.2.
Catchment 89 Baseline Assessment

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