Llywodraeth Cymru / Welsh Government

A487 New Dyfi Bridge

Environmental Statement - Volume 3: Appendix 15.7

Assessment of Pollution Impacts from Accidental Spillage - Method D

Final Issue | March 2016

Factors from the current DMRB 11.3.10 (HD 49/09)

Table D1.1 - Serious Accidental Spillages in Billion HGV km/year

	Motorways	Rural Trunk Roads	Urban Trunk Roads
No junction	0.36	0.29	0.31
Slip Road	0.43	0.83	0.36
Roundabout	3.09	3.09	5.35
Cross road	N/A	0.88	1.46
Side Road	N/A	0.93	1.81
Total	0.37	0.45	0.85

The risk factor applies to all road lengths within 100m of these junction types. So for a side road joining an urban trunk road the factor is 1.81 for 100m of the side road and for a 200m length of the trunk road, centred on the junction.

Table D1.2 - Probabaility of a Serious Pollution Incident Occuring as a result of a Serious Accidental Spillage

Water Quality Objective of Receiving Watercourse	Urban (response time to site<20mins)	Rural (response time to site<1 hour)	Remote (response time to site>1hour)
Surface Watercourse	0.45	0.6	0.75
Groundwater	0.3	0.3	0.5

Table 8.1 Spillages - Indicative Pollution Risk Reduction Factors

System	**Risk Reduction Factor R_f**	**(%)**
Passive Sytems		
Filter Drain	0.6	40%
Grassed Ditch/Swale	0.6	40%
Pond	0.5	50%
Wetland	0.5	50%
Infiltration Basin	0.6	40%
Sediment Trap	0.6	40%
Vegetated Ditch	0.7	30%
Active Systems		
Penstock/Vale	0.4	60%
Notched Weir	0.6	40%
Other Systems		
Oil Seprator	0.5	50%

These factors and corresponding percentage reductions, represent what is considered achievable.
In many situations a higher factor, representing a lower risk reduction may be more appropriate.

ARUP

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Version/Revision	1

Design Year 2034

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Checked by:		
Approved by:		

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Location	Road Reference (refer to attached junction layouts)	Start chainage (m)	End chainage (m)	Length (km)	Receiving reach	Table D1.1 Road Category	2-way AADT	%HGV	%HGV factor for unusally high proportions of hazardous materials	Factored %HGV	Pspl	P_{pol} (table D 1.2)	P_{inc}	Total Annual Probability	Acceptable Risk (normally 1%, or 1-in-100 year)	Do individual outfall risks need to be identified?	Highest individual risk	Can the highest individual risk be reduced?	comments
Outfall 1	B4404 Junction			0.16	River Dyfi	0.93	2072	3.43	1	3.43	0.000%	0.6	0.000%						
	A487 (1)			0.04	River Dyfi	0.29	3186	3.43	1	3.43	0.000%	0.6	0.000%						
	A493 Side Road			0.21	River Dyfi	0.29	1576	3.43	1	3.43	0.000%	0.6	0.000%						
	A493 Side Road Junction			0.42	River Dyfi	0.93	1576	3.43	1	3.43	0.001%	0.6	0.000%						
	A487 (2)			0.06	River Dyfi	0.29	3186	3.43	1	3.43	0.000%	0.6	0.000%	0.001%					
Outfall 2	Junction near Eco Park road			0.17	River Dyfi - via pumping station	0.93	3186	3.43	1	3.43	0.001%	0.6	0.000%	0.000%					
Outfall 3	New Aquaduct			0.67	River Dyfi	0.29	2384	3.43	1	3.43	0.001%	0.6	0.000%						
	Road north towards old bridge			0.30	River Dyfi	0.29	3186	3.43	1	3.43	0.000%	0.6	0.000%						
	New approach to Bridge			0.10	River Dyfi	0.93	3186	3.43	1	3.43	0.000%	0.6	0.000%	0.001%					
All Drainage discharging to Dyfi River	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002%	1.000%	No	0.000%	No	
													(1-in-	50262	-year)	Pollution Control measures are not required			

P_{acc}=Probability of a spillage accident .
P_{pol}=Probability of serious pollution occuring, given an accident happens.
P_{inc}=P_{acc} x P_{pol}
factored %HGV=%HGV factor for unusally high proportions of hazardous materials x %HGV .
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	Road north towards old bridge			0.30	River Dyfi	0.29	3186	3.43	1	3.43	0.000%	0.3	0.000%	0.000%					
	New approach to Bridge			0.10	River Dyfi	0.93	3186	3.43	1	3.43	0.000%	0.3	0.000%	0.000%					

All Drainage discharging to Dyfi River	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001%	1.000%	No	0.000%	No	
														(1-in-	100524	-year)	Pollution Control measures are not required		

P_{acc}=Probability of a spillage accident .
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	New approach to Bridge			0.10	River Dyfi	0.93	1576	2.19	1	2.19	0.000%	0.6	0.000%	0.000%					
All Drainage discharging to Dyfi River	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002%	1.000%	No	0.000%	No	
													(1-in-	60095	-year)	Pollution Control measures are not required			

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All Drainage discharging to Dyfi River	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001%	1.000%	No	0.000%	No	
														(1-in-	120189	-year)	Pollution Control measures are not required		

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Outfall 2	Dyfi Eco Park Junction			0.24	River Dyfi	0.93	2454	3.43	1	3.43	0.001%	0.6	0.000%						
	A487 Road			0.55	River Dyfi	0.29	2454	3.43	1	3.43	0.000%	0.6	0.000%	0.001%					
All Drainage discharging to Dyfi River	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001%	1.000%	No	0.000%	No	
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DRMB 11.3.10 (HD 45/09) - Assessment of Pollution Impacts from Accidental Spillages - Method D

ARUP

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All Drainage discharging to Dyfi River	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001%	1.000%	No	0.000%	No	
														(1-in-	161168	-year)	Pollution Control measures are not required		

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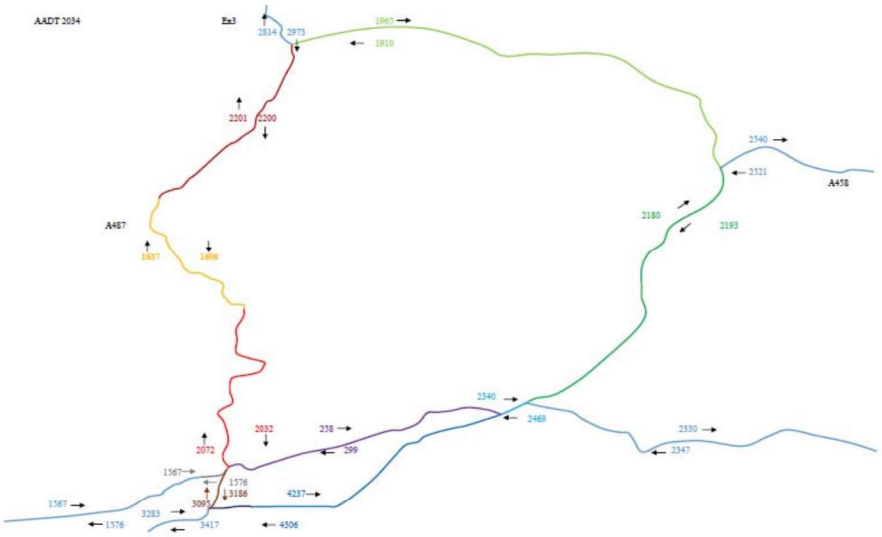
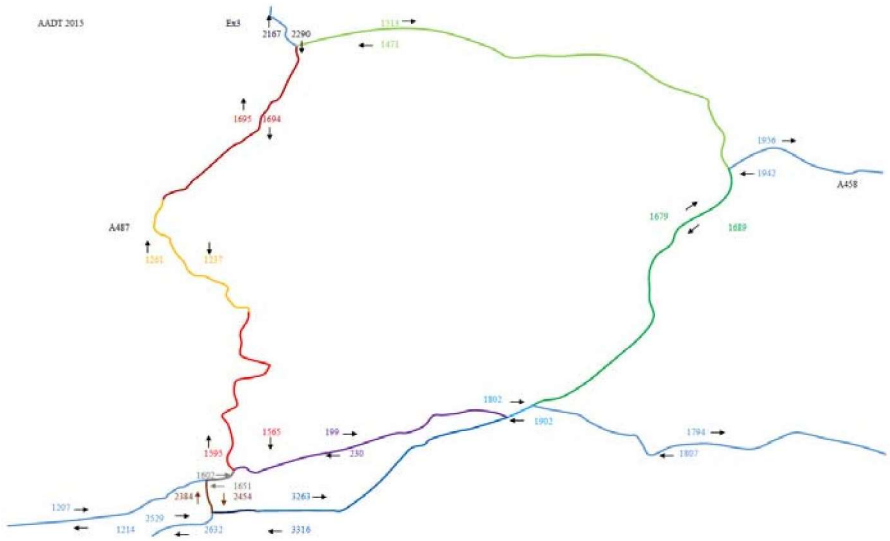
Figure 2

AADT DS 2034



AADT2015



AADT 2015 speeds & Commercial Vehicles