3.4 Dunsmore, Wendover and Halton (CFA10)

Dunsmore, Wendover and Halton (CFA10) SES3 and AP4 revised scheme changes

3.4.1 The original scheme is described in section 7.6 of the main TA and with key changes assessed in the SES and AP2 TA (section 3.4), including the removal of sustainable placement area at Hunt's Green Farm (SES-010-199).

3.4.2 The following AP4 amendment, located in CFA9 (Central Chilterns), has necessitated a revision to the number of construction vehicle trips by road within CFA10:

- extension to the Chiltern tunnel from Mantle's Wood portal to South Heath green tunnel north portal and associated works in CFA9 (AP4-009-001).

3.4.3 In addition to this, and exploiting the opportunity presented by this amendment, the principal SES3 and AP4 revised scheme changes of relevance to traffic and transport in the assessment of this area are:

- changes to forecast construction traffic flows, due to a difference in trips generated by compounds within the area related to the Chiltern Tunnel extension.;
- Bowood Lane Overbridge satellite compound is now accessed via the new haul road linking to the Chiltern Tunnel North Portal satellite compound ; and
- revised construction routes as a result of the new A413 link road to the Chiltern Tunnel North Portal satellite compound, particularly in relation to Hunts Green.

3.4.4 Additional traffic surveys have been undertaken at the following junctions in the Dunsmore, Wendover and Halton area to supplement the information reported in the main TA and SES and AP2 TA :

- A413 /Rocky Lane/ Chesham Lane;
- A4010 Risborough Road /B4009 Nash Lee Road /Chalkshire Road; and
- A4010 Risborough Road /North Lee Road.

3.4.5 A change to the workforce trip assignment has been made on Small Dean Lane within this area. This has resulted in a change in all vehicle construction trips. This is not considered to have a material impact upon the main TA and SES and AP2 TA technical assessment.

3.4.6 In addition, there is a correction to the diversion distance for non-motorised users at Footpath ELL/25.

Assessment methodology

3.4.7 The assessment methodology is as described in Section 7.2 of the main TA.

Existing baseline

3.4.8 Baseline conditions in this area are as described in Section 5.12 of the main TA and the SES and AP2 TA, updated by the additional survey data. Further information on surveys can be found in the supplementary baseline survey report in Annex B(iii).

Future baseline

3.4.9 Future baseline traffic conditions are as described in Section 7.6 of the main TA and the SES and AP2 TA, updated by the additional survey data. .

Construction description

Compounds and construction sites

3.4.10 Table 7-60 is updated to incorporate the South Heath MPATS (rail systems) at the Leather Lane overbridge satellite compound (civil engineering), which is a result of the extension of Chiltern tunnel amendment in CFA9 (AP4-009-001).

Table 7-60: Dunsmore, Wendover & Halton assumed workforce at construction sites

Compound type	Location	Assumed daily workforce per site for duration of the construction programme	
		Average	Peak
Satellite	Leather Lane overbridge satellite compound (civil engineering)/ South Heath MPATS (rail systems)	40	90

Construction trip assumptions

Trip generation

3.4.11 Table 7-61 in the main TA and SES and AP2 TA is amended. The average-peak daily two-way HGV trips generated for the South Heath MPATS (rail systems), which is part of the Leather Lane overbridge satellite compound (civil engineering) satellite compound as a result of the Chiltern tunnel extension amendment, is 30-50, whilst cars/LGVs are 80-110. The average-peak daily two-way HGV trips generated for the Small Dean viaduct launch satellite compound is 20-30, in relation to 290-450 in the SES and AP2 TA. Likewise, the HGV trip generation for the Rocky Lane underbridge/Wendover auto-transformer station satellite compound is 140-230, in relation to less than 10 in the SES and AP2 TA. These changes are due to the revised construction assumptions within this area, relating to 50% of excavated material trips previously using Rocky Lane to be routed via new A413 link road. It is also due to now assigning excavated material trips to the Rocky Lane underbridge/Wendover auto-transformer station satellite compound, rather than the Small Dean viaduct launch satellite compound, to reflect site activities, although this has no impact upon the traffic and transport assessment.

Assignment

3.4.12 Paragraph 3.4.13 of the SES and AP2 TA is amended to remove 'the A413 between Rocky Lane and B4009 Nash lee Road' and this text is replaced by 'the A413 between the boundary of Central Chilterns (CFA9) and B4009 Nash Lee Road'. This is due to revised construction assumptions, due to the Chiltern Tunnel extension (AP4-009-001), in CFA9.

3.4.13 Paragraph 3.4.14 of the SES and AP2 TA is amended to remove '70 cars/LGVs and 30 HGVs per day (two way)', in relation to cumulative construction flow to the south, and this text is replaced with '120 cars/LGVs per day (two way) and 30 HGVs per day (two way)'. This is due to different construction compound vehicle trip generation in the Central Chilterns (CFA9), as a result of the Chiltern Tunnel extension (AP4-009-001).

Construction lorry routes

3.4.14 Paragraph 7.6.46 of the main TA is amended as follows. This is due to revised construction route assumptions due to the Chiltern Tunnel extension (AP4-009-001), in CFA9:

- 'Leather Lane overbridge satellite compound will be accessed via Leather Lane and the new haul road from Chiltern Tunnel North Portal satellite compound via the Chiltern Tunnel North Portal satellite compound link road from the A413'; and
- 'Bowood Lane overbridge satellite compound will be accessed via Bowood Lane and the new haul road from Chiltern Tunnel North Portal satellite compound, via the Chiltern Tunnel North Portal satellite compound link road from the A413'.

PRoW closures and diversions

3.4.15 Table 7-63 of the main TA is amended to change the references to diversion of the Footpath ELL/25. The distance of the diversion is amended to 450m for the same duration of 12-18 months.

Assessment of construction impacts

Highway network

3.4.16 Changes to forecast traffic flows as a result of the SES3 and AP4 revised scheme are presented in the following sections. There are no changes to other forecast flows presented in the main TA and SES and AP2 TA.

3.4.17 The key changes in this CFA are:

- changes to forecast construction traffic flows, due to a difference in trips generated by compounds within the area related to the Chiltern Tunnel extension.;

- revised construction route assumption, resulting in a decrease in all construction vehicles on King's Lane (Kingsash) between Rocky Lane (also known as Chesham Lane) and Bowood Lane, by up to 20 two-way trips a day. Under the AP4 revised scheme, Bowood Lane Overbridge satellite compound is now accessed via the new haul road linking to the Chiltern Tunnel North Portal satellite compound ; and
- revised construction routes as a result of the new A413 link road to the Chiltern Tunnel North Portal satellite compound. This has enabled 50% of trips related to the movement of excavated material from Hunts Green (previously all using Rocky Lane) to be routed via new A413 link road, the A413 between the link road and B4009 Nash Lee Road, and Nash Lee Road. This revision to construction routes will have the following impacts:
  - Rocky Lane, between the A413 London Road and Rocky Lane underbridge satellite construction compound - decrease in HGV flows; and
  - A413, between Chiltern Tunnel North Portal satellite compound link road (in CFA9) and Rocky Lane - increase in HGV flows.

3.4.18 The impacts of these changes are considered in the following section.

Strategic and local road network

3.4.19 Tables 7-64 and Table 7-67 of the SES and AP2 TA are amended.

Table 7-64: Dunsmore, Wendover & Halton strategic road network construction traffic flows (vehicles) - AM peak – partial replacement

Location	Direction	2012 baseline	2021 baseline	2021 With HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
A413 London Road between B485 Frith Hill/Chesham Road (in CFA9) and Rocky Lane	NB	661	720	805	41	84	21	12%	100%
	SB	1105	1204	1245	70	41	21	3%	42%
A413 London Road, between Rocky Lane and Small Dean Lane	NB	749	875	927	44	52	35	6%	348%
	SB	1156	1351	1457	59	107	35	8%	139%
A413 Nash Lee Road, between Small Dean Lane and the B4009 Nash Lee Road	NB	604	706	759	63	53	38	8%	151%
	SB	808	945	1052	68	107	38	11%	126%
B4009 Nash Lee Rd, between A4010 Aylesbury Road and A413 Nash Lee Road	EB	519	608	687	47	79	38	13%	430%
	WB	584	684	732	44	49	38	7%	629%

Table 7-65: Dunsmore, Wendover & Halton strategic road network construction traffic flows (vehicles) - PM peak – partial replacement

Location	Direction	2012 baseline	2021 baseline	2021 With HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
A413 London Road between B485 Frith Hill/Chesham Road (in CFA9) and Rocky Lane	NB	1039	1131	1166	34	35	16	3%	93%
	SB	648	706	784	21	78	16	11%	371%
A413 London Road, between Rocky Lane and Small Dean Lane	NB	1232	1453	1560	38	107	30	7%	398%
	SB	776	916	968	36	52	30	6%	542%
A413 Nash Lee Road, between Small Dean Lane and the B4009 Nash Lee Road	NB	901	1063	1161	43	99	31	9%	261%
	SB	565	667	712	46	45	31	7%	212%
B4009 Nash Lee Rd, between A4010 Aylesbury Road and A413 Nash Lee Road	EB	192	222	727	37	40	31	6%	564%
	WB	366	423	623	33	71	31	13%	1473%

Table 7-66: Dunsmore, Wendover & Halton local road network construction traffic flows (vehicles) - AM peak – partial replacement

Location	Direction	2012 baseline	2021 baseline	2021 With HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
Rocky Lane (also known as Chesham Lane), between the A413 London Road and Rocky Lane underbridge satellite compound.	NB	77	85	127	19	42	19	50%	4241%
	SB	63	68	115	19	47	19	68%	5655%
King's Lane (Kingsash), between Rocky Lane and Bowood Lane	NB	1	1	1	0	0	0	0%	0%
(Note that due to low traffic flows, %'s are reflective of numerical rounding of low figures)	SB	2	2	3	0	1	0	21%	0%

Table 7-67: Dunsmore, Wendover & Halton local road network construction traffic flows (vehicles) - PM – partial replacement

Location	Direction	2012 baseline	2021 baseline	2021 With HS2 construction traffic		With HS2 actual change from 2021 baseline		With HS2 % change from 2021 baseline	
		All vehicles		All vehicles	HGVs	All vehicles	HGVs	All vehicles	HGVs
Rocky Lane (also known as Chesham Lane), between the A413 London Road and Rocky Lane underbridge satellite compound.	NB	67	73	115	16	42	15	58%	14125%
	SB	48	53	91	15	39	15	73%	-
King's Lane (Kingsash), between Rocky Lane and Bowood Lane	NB	1	2	2	0	0	0	0%	0%
(Note that due to low traffic flows, %'s are reflective of numerical rounding of low figures)	SB	1	1	2	0	1	0	67%	0%

3.4.20 Revised construction assumptions have resulted in an increase in HGV movements on the A413, between the Chiltern Tunnel North Portal satellite compound link road (in CFA9) and Rocky Lane. This section of road is a new route for the movement of excavated material, in comparison with the SES scheme. There is also a reduction in HGV vehicle movements on Rocky Lane.

3.4.21 The SES3 and AP4 revised scheme has resulted in an increase in construction traffic movements on the A413, between B485 Frith Hill/ Chesham Road (in CFA9) and B4009 Nash Lee Road, and on B4009 Nash Lee Road. It has also resulted in a decrease in construction traffic movements on King's Lane (Kingsash), between Rocky Lane and Bowood Lane. This is related to a difference in trips generated by compounds within the area due to the Chiltern Tunnel extension (AP4-009-001) in CFA9. The change in flows, however, is 20 two-way vehicle trips a day or fewer.

3.4.22 Due to the revised construction assumptions, paragraph 3.4.19 of the SES and AP2 TA is amended to remove '"A413, between Rocky Lane and the B4009 Nash Lee Road", which is replaced by "A413 between the boundary of Central Chilterns (CFA9) and B4009 Nash Lee Road".

Junction capacity

3.4.23 Paragraph 3.4.20 of the SES and AP2 TA noted that the junctions of A413 London Road/Dunsmore Lane and A413 London Road/Bowood Lane would not be likely to experience additional intermittent traffic congestion and delay during peak periods with the SES3 and AP4 revised scheme is deleted. There junctions are likely to be affected due to revised construction assumptions increasing HGV construction traffic on the A413 between the Chiltern Tunnel North Portal satellite compound link road (in CFA9) and Rocky Lane. This section of road is now used for the movement of excavated material.

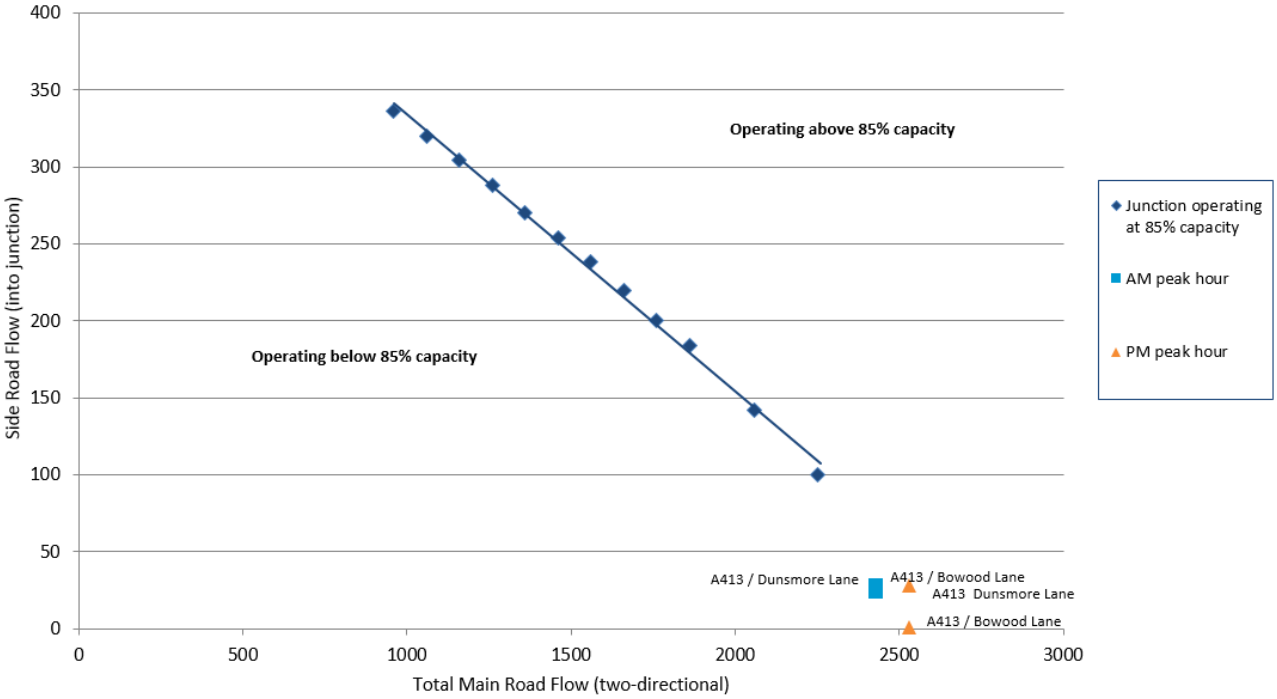
3.4.24 These priority junctions have been re-assessed based upon the revised traffic flows as a result of the SES3 and AP4 revised scheme (as well as a refinement to trips assigned on Bowood Lane). Table 7-68 of the SES and AP2 TA is replaced.

Table 7-68: Dunsmore, Wendover & Halton priority junction flows

Junction	**2021 With HS2 construction traffic**			
	AM peak		**PM peak**	
	Main road flow (PCUs)	**Side road flow (PCUs)**	**Main road flow (PCUs)**	**Side road flow (PCUs)**
A413 London Road with Bowood Lane	2427	28	2528	1
A413 London Road Dunsmore Lane	2427	24	2528	28

3.4.25 Figure 7-7 of the SES and AP2 TA is also replaced.

Figure 7-7: Dunsmore, Wendover & Halton priority junction assessment 2021



3.4.26 This indicates that the A413 London Road/Dunsmore Lane and A413 London Road/Bowood Lane junctions fall below the 'threshold' of capacity during both AM and PM peaks and are therefore not forecast to be at capacity during construction of the revised scheme. As a result, they are not considered for individual assessment and have not been further assessed with junction assessment software.

3.4.27 The A413 London Road/Small Dean Lane and A413 Nash Lee Road/B4009 Nash Lee Road non-priority junctions have been re-assessed using industry standard software, based upon SES3 and AP4 revised scheme forecast traffic flows. Table 7-69 and Table 7-70 of the SES and AP2 TA are replaced.

3.4.28 There is little change to the result of the assessment carried out and reported in the main TA and SES and AP2 TA, whereby the modelling results indicate that both the A413 London Road/Small Dean Lane and A413 Nash Lee Road/B4009 Nash Lee Road junctions will operate within capacity during construction. The highest percentage of flow to capacity at each of these junctions is below 85%, with construction traffic resulting in a maximum increase of 16% on any arm. The impact of the SES3 and AP4 revised scheme is therefore not considered to have a substantial impact upon operation of these junctions.

Table 7-69: Forecast baseline and construction scenario performance at A413 London Road/ Small Dean Lane junction (priority roundabout)

0800-09:00	**2021 baseline**			**2021 With HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
London Road /South Street	443	34%	1	443	37%	0.6
A413 London Road (s)	885	39%	1	1000	45%	0.9
Small Dean Lane	3	0%	0	12	2%	0
A413 London Road (N)	975	49%	1	1122	57%	1.5
Total	N/A	49%	N/A	N/A	45%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
London Road /South Street	277	18%	1	277	19%	0.2
A413 London Road (s)	1461	65%	2	1577	72%	2.7
Small Dean Lane	10	3%	0	53	19%	0.3
A413 London Road (N)	682	37%	1	765	43%	0.8
Total	N/A	65%	N/A	N/A	72%	N/A

Table 7-70: Forecast baseline and construction scenario performance at A413 Nash Lee Road/ B4009 Nash Lee Road junction (priority roundabout)

0800-09:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A413 (NE)	1070	51%	1	1111	55%	1
A413 (S) Nash Lee Road	731	37%	1	829	42%	1
B4009 Nash Lee Road	617	34%	1	743	41%	1
Total	N/A	51%	N/A	N/A	55%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A413 (NE)	817	37%	1	817	38%	1
A413 (S) Nash Lee Road	1075	53%	2	1222	60%	2
B4009 Nash Lee Road	694	42%	1	778	48%	1
Total	N/A	53%	N/A	N/A	60%	N/A

3.4.29 The supplementary survey data has been used in a further assessment of the A413/Rocky Lane/ Chesham Lane and A4010 Risborough Road/B4009 Nash Lee Road/ Chalkshire Road junctions, using industry standard software. The results are shown in Tables 7-70.1 and 7-70.2, and this updates the assessment within the main TA and SES and AP2 TA for these junctions.

3.4.30 The modelling results indicate that the junction of A413/Rocky Lane/ Chesham Lane will operate over capacity, with the Rocky Lane minor arm over 85% percentage of flow to capacity during both AM and PM peaks. This indicates that the junction will experience intermittent traffic congestion and delay during construction. However, this arm is forecast to be well in excess of capacity in the 2021 baseline, which indicates that junction is likely to be under operational stress prior to the introduction of construction traffic. The high flow to capacity percentage on the Rocky Lane arm indicates that the level of through flow traffic on the A413 makes it difficult for vehicles to exit from Rocky Lane onto the A413.

3.4.31 The modelling results indicate that the junction of A4010 Risborough Road/B4009 Nash Lee Road/ Chalkshire Road will operate within capacity during construction, with the highest percentage of flow to capacity at 75% on the Chalkshire Road arm in the PM peak. Construction traffic results in a maximum increase of 2% and the revised scheme is not considered to have a substantial impact on capacity at this junction.

Table 7-70.1: Forecast baseline and construction scenario performance at A413 /Rocky Lane/ Chesham Lane junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A413 North	1492	0	0	1624	0	0
Rocky Lane	69	198%	30	112	999%	95
A413 South	937	2%	0	1039	14%	0
Total	N/A	198%	N/A	N/A	999%	N/A

17:00-18:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A413 North	1001	0	0	1113	0	0
Rocky Lane	49	102%	4	128	685%	86
A413 South	1598	2%	0	1677	2%	0
Total	N/A	102%	N/A	N/A	685%	N/A

Table 7-70.2: Forecast baseline and construction scenario performance at A4010 Risborough Road/ B4009 Nash Lee Road /Chalkshire Road junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
B4009 Nash Lee Road East	673	0	0	708	0	0
Chalkshire Road	211	46%	1	211	47%	1
B4009 Nash Lee Road West	877	61%	2	938	62%	2
Total	N/A	61%	N/A	N/A	62%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
B4009 Nash Lee Road East	680	0	0	723	0	0
Chalkshire Road	288	73%	3	288	75%	3
B4009 Nash Lee Road West	1002	37%	1	1022	38%	1
Total	N/A	73%	N/A	N/A	75%	N/A

3.4.32 Using the supplementary survey data, assessment of the A4010 Risborough Road/North Lee Road junction has been undertaken. The results are shown in Table 7-70.3.

3.4.33 The modelling results indicate that the junction of A4010 Risborough Road/North Lee Road will operate over capacity during construction of the revised scheme, with the North Lee Road minor arm over 85% percentage of flow to capacity during both AM and PM peaks. This indicates that the junction will experience intermittent traffic congestion and delay during construction.

Table 7-70.3: Forecast baseline and construction scenario performance at A4010 Risborough Road with North Lee Road junction

0800-09:00	2021 baseline			2021 with HS2 construction traffic		
Approach (from)	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (All PCU)**	**Flow/ capacity %**	**Max queue**
A4010 Risborough Road (South)	948	0%	0	973	0%	0
North Lee Road	137	80%	4	267	141%	80
A4010 Risborough Road (North)	998	0%	0	1112	27%	0
Total	N/A	80%	N/A	N/A	141%	N/A
17:00-18:00	**2021 baseline**			**2021 with HS2 construction traffic**		
Approach (from)	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**	**Flow (all PCU)**	**Flow/ capacity %**	**Max queue**
A4010 Risborough Road (South)	1154	0%	0	1155	0	0
North Lee Road	70	52%	1	175	107%	19
A4010 Risborough Road (North)	933	2%	0	1069	31%	1
Total	N/A	52%	N/A	N/A	107%	N/A

Operation description and assessment of operation impacts

3.4.34 There is no change to the assessment described in section 7.6 of the main TA.