HIGHLAND HOUSING MARKET PARTNERSHIP
ANALYSIS OF THE SENSITIVITY OF THE HNDA TOOL RESULTS TO CHANGING PARAMETERS

1. **Introduction**

1.1 The Housing Need and Demand Assessment (HNDA) Tool developed by the Scottish Government's Centre for Housing Market Analysis (CHMA) has been used to assess the total future housing requirement and the split between open market housing and housing that needs subsidy (affordable housing). Our HNDA relies on one chosen scenario but the tool has been contains a number of parameters that can be varied to look at the response to different socio-economic conditions. There are a large number of potential combinations of parameters so, to keep the analysis manageable, the approach used here has been to keep the basic set up constant – the HNDA scenario – and vary only one parameter at a time.

1.2 In attempting to better understand this a variety of tool runs were carried out – some however were found to contain incorrect input data and are therefore ignored in this analysis

1.3 A selection of these are considered in this document with relevant commentary. The complete set of tool runs and Highland Wide results are included as an appendix to these documents.

1.4 This analysis concentrates upon the Highland Council Wide figures. The allocation by HMA although important to Highland Council is not covered in this comparative analysis.

2. **Sensitivity Comparisons**

2.1 **Scenario 1 (Sc1) – 2016 Principal Projection – All Default Settings**

2.2 **Scenario 2 (Sc2) - Change is to use the 2016 High Migration Projection over the Principal Projection**

Comparison - Sc2 vs Sc1
The outcome of this change is an increase in year 1 - 2019 from 744 to 872 and by 2038 from 97 to 309. This is a increase in the 20 year total housing need of 3420 (from 6934 to 10354). This increase is all from the population driven housing need.

2.3 **Scenario 3 (Sc3) - Change is to use the 2016 Low Migration Projection over the Principal Projection**

Comparison – Sc3 vs Sc1
Outcome is a decrease in 2019 from 744 to 625 and by 2038 from 97 to -102309 (20 years). If we total the 20 year housing need we get a total of 3631. This however includes years from 2032 to 2038 where a negative housing demand is calculated. The total of only the positive years of housing demand (2019 to 2031) is a total of 3987. This is a decrease from 6934 (Sc 1 default Principal Projection) of 2947.

2.4 **Scenario 4 (Sc4) used the High Migration Scenario. Change is instead of the default distribution of Household Need based upon Census 2011 derived residential property counts per HMA, uses the projected proportions of 16-64 age groups (representing likely household formers) to test a better distribution scenario.**

Comparison – Sc4 vs S2

At Highland Wide level this change does not alter the Scenario 2 Highland Council area total figures (other than small rounding differences). Due to the different allocation of "arising need" to different HMAs (away from the default model that splits using historic dwelling counts – towards a better view of future need) – the HMA based tenure splits of the resulting need are also altered.

- o In Caithness – the Default approach High Migration Projection (Sc2) suggests a Social Rent tenure need of 36 per year (averaged over year 1-5) whereas using this method of allocation Caithness HMA suggests an average of 6 per year. For Private Buyers Sc2 suggests 30 per year for years 1 to 5 but "-26" in Scenario 4. This negative need is not catered for well in the tool – and the positive need total of 816 in years 1-5 in Scenario becomes 868 in Scenario 4 (which become 816 when the three negative HMA figures in years 1-5 are deducted).
- o In contrast – the Inverness HMA in Scenario 2 identifies a total of 275 per year (years 1 to 5) but the approach used in Scenario 4 allocates 534 per year to Inverness HMA.

HOUSING NEED AND DEMAND ASSESSMENT

Key Findings Template: Estimate of Additional (New) Future Housing Units

	Number of years to clear existing need
Total households with **existing need (net)**	840	5

Household Projection Period

2018/19 to 2037/38

	Sc1 - Principal Projection	Sc2 - High Migration Projection	Sc3 - Low Migration Projection	Sc4 - High Migration - Pop Based Distribution to HMAs
Total number of new **households** over the projection period	6,094	9,516	3,147	9,516

HNDA Projection Period

Mid 2020 to Mid 2039

ANNUAL NEED - YEARS 1 TO 5

Total households over the projection period who *may* afford:	Scenario 1	Scenario 2	Scenario 3	Scenario 4
OWNER OCCUPATION	140	177	103	162
PRIVATE RENT	139	176	102	213
BELOW MARKET RENT	134	170	98	161
SOCIAL RENT	266	292	240	280
Total additional future housing units	678	815	543	816

ANNUAL NEED - YEARS 5 TO 10

Total households over the projection period who *may* afford:	Scenario 1	Scenario 2	Scenario 3	Scenario 4
OWNER OCCUPATION	92	131	52	115
PRIVATE RENT	95	136	54	174
BELOW MARKET RENT	105	151	60	144
SOCIAL RENT	88	126	50	112
Total additional future housing units	381	544	217	544

ANNUAL NEED - YEARS 10 TO 15

Total households over the projection period who *may* afford:	Scenario 1	Scenario 2	Scenario 3	Scenario 4
OWNER OCCUPATION	44	81	8	61
PRIVATE RENT	48	89	9	132
BELOW MARKET RENT	61	114	11	109
SOCIAL RENT	56	106	10	88
Total additional future housing units	208	390	37	390

ANNUAL NEED - YEARS 15 TO 20

Total households over the projection period who *may* afford:	Scenario 1	Scenario 2	Scenario 3	Scenario 4
OWNER OCCUPATION	21	56	0	38
PRIVATE RENT	25	67	0	103
BELOW MARKET RENT	36	97	0	94
SOCIAL RENT	37	101	0	86
Total additional future housing units	120	321	0	321

CUMULATIVE TOTAL AT END OF PROJECTION PERIOD

Total households over the projection period who *may* afford:	Scenario 1	Scenario 2	Scenario 3	Scenario 4
OWNER OCCUPATION	296	446	163	376
PRIVATE RENT	307	468	165	621
BELOW MARKET RENT	336	531	169	508
SOCIAL RENT	448	625	299	566
Total additional future housing units	6,934	10,354	3,987	10,357

2.5 **Scenario 5 (Sc5) – 2016 High Migration Projection – All Default Settings. Change is 1% per year growth applied in Lochaber HMA only FOR 10 YEARS.**
Comparison – Sc5 vs Sc2
Applying growth figures only to the Lochaber HMA only increases the housing requirements in this HMA only. The total Highland Council Area wide in years 1-5 increases from 4077 to 4573 with this adjustment, in years 5-10 this increases from 2721 to 3038 Highland Wide. The next two 5 year periods as expected show no change.

2.6 **Scenario 6 (Sc6) – 2016 High Migration Projection – Change is HC derived Existing Need allocated correctly to HMAs of 2144 (as used in 2015 HNDA) – not the default figure supplied 840 (split to HMA using Census 2011 Dwelling counts)– 1% per year growth applied in Lochaber HMA only.**
Comparison – Sc6 vs Sc5
Using HC figure of 2144 over 840 increases (both applied to be cleared over 5 years) increases the backlog clearance or existing need year 1-5 figures Highland Council area wide from 168 per year to 429 per year. This increases the total for years 1-5 from 4573 to 5877 with only the Social Rent Tenure being affected – increasing from 1561 over 5 years (312 per year) to 2865 ove r 5 years (573 per year).

2.7 **Scenario 7 (Sc7) – 2016 High Migration Projection – HC derived backlog of existing need allocated correctly to HMAs of 2144 (as used in 2015 HNDA) – not the default figure supplied 840 (split to HMA using Census 2011 Dwelling counts) – 1% per year growth applied in Lochaber HMA only. Change is to use 10 Years to clear backlog (instead of the default 5 years)**
Comparison – Sc7 vs Sc6
The previously used backlog figure of 429 per year to be cleared is reduced to 214 per year when split over 10 years. Compared with Sc6 this decreases the totals for years 1-5 from 429 to 214 per year but extends this clearance into years 6-10. Total figures I all tenures for yrs 1 to 10 are 8915 in Sc 6 and Sc 7. The only changes are apparent in the Social Rent tenure for years 1 to 10 as the backlog of existing need is all allocated to that tenure.

HOUSING NEED AND DEMAND ASSESSMENT

Key Findings Template: Estimate of Additional (New) Future Housing Units

	Number of years to clear existing need	
Total households with existing need (net)	840 or 2144	5 or 10

Household Projection Period

	2018/19 to 2037/38		
	Sc5- High Mig - Lochaber 1%	Sc6 - High Mig - Lochaber 1% - HC derived backlog 5 yrs	Sc7- High Mig - Lochaber 1% - HC derived backlog 10 yrs
Total number of new households over the projection period	10,327	10,327	10,327

HNDA Projection Period

Mid 2020 to Mid 2039

ANNUAL NEED - YEARS 1 TO 5

Total households over the projection period who may afford:	Scenario 5	Scenario 6	Scenario 7
OWNER OCCUPATION	206	206	206
PRIVATE RENT	200	200	200
BELOW MARKET RENT	136	136	136
SOCIAL RENT	312	573	359
Total additional future housing units	915	1,175	961

ANNUAL NEED - YEARS 5 TO 10

Total households over the projection period who may afford:	Scenario 5	Scenario 6	Scenario 7
OWNER OCCUPATION	148	148	148
PRIVATE RENT	150	150	150
BELOW MARKET RENT	169	169	169
SOCIAL RENT	141	141	355
Total additional future housing units	608	608	822

ANNUAL NEED - YEARS 10 TO 15

Total households over the projection period who may afford:	Scenario 5	Scenario 6	Scenario 7
OWNER OCCUPATION	81	81	81
PRIVATE RENT	89	89	89
BELOW MARKET RENT	114	114	114
SOCIAL RENT	106	106	106
Total additional future housing units	390	390	390

ANNUAL NEED - YEARS 15 TO 20

Total households over the projection period who may afford:	Scenario 5	Scenario 6	Scenario 7
OWNER OCCUPATION	56	56	56
PRIVATE RENT	67	67	67
BELOW MARKET RENT	97	97	97
SOCIAL RENT	101	101	101
Total additional future housing units	321	321	321

CUMULATIVE TOTAL AT END OF PROJECTION PERIOD

Total households over the projection period who may afford:	Scenario 5	Scenario 6	Scenario 7
OWNER OCCUPATION	2,456	2,456	2,457
PRIVATE RENT	2,532	2,532	2,529
BELOW MARKET RENT	2,881	2,881	2,880
SOCIAL RENT	3,298	4,602	4,604
Total additional future housing units	11,167	12,471	12,470

2.8 (Scenarios 8 to 16 were attempts incorporating experimental approaches identifying backlog of need – a number used an erroneous (corrected from Scenario 17) bae figure for backlog calculation. A detailed analysis of these are not relevant for sensitivity testing and all used the 2016 High Migration projection.)

2.9 Scenario 17 (Sc17) - used 2016 High Migration Projection and uses the final updated 1st April 2020 snapshot of the Highland Housing Register to create the backlog assessment described in Paper_1_Backlog_Definition_2020_HNDA. This results in a figure of 2236 to use as a backlog to clear. A 10 year period over which this is to be cleared is used.

2.10 Scenario 18 (Sc18) - incorporates the updated 2018 High Migration Projection – still using a base year of 2019. 10 years used to clear the same backlog of 2236.

Comparison – Sc17 vs Sc18

With the same figures for backlog clearance over 10 years – the only difference between these scenarios is the changed reference household projection (from "2016 based High Migration" in Sc 17 to "2018 based high migration" in Sc 18). The 20 year cumulative total for the 2016 projection (Sc17) is 9515 – reducing to 7968 in the 2018 projection (down 1547).

The big changes are a falls in all tenures in all years. The largest proportions are in owner occupation and Private Rental tenures in years 1 to 10 – then in all tenures in years 10 to 15 due to the changes in projected population/households.

HOUSING NEED AND DEMAND ASSESSMENT

Key Findings Template: Estimate of Additional (New) Future Housing Units

		Number of years to clear existing need
Total households with **existing need (net)**	2,236	10

Household Projection Period

	2018/19 to 2037/38 (Sc 17 and 18)	
	Sc17 - High Mig - 2016 based - HC derived backlog 10 yrs	Sc18 - High Mig _2018 based - HC derived backlog 10 yrs
Total number of new **households over the projection period**	**9,515**	**7,968**

HNDA Projection Period

2018/19 to 2037/38 (Sc 17 and 18)

ANNUAL NEED - YEARS 1 TO 5

Total households over the projection period who *may* afford:	Scenario 17	Scenario 18
OWNER OCCUPATION	170	150
PRIVATE RENT	187	165
BELOW MARKET RENT	168	149
SOCIAL RENT	346	332
Total additional future housing units	**871**	**796**

ANNUAL NEED - YEARS 5 TO 10

Total households over the projection period who *may* afford:	Scenario 17	Scenario 18
OWNER OCCUPATION	125	100
PRIVATE RENT	145	116
BELOW MARKET RENT	150	119
SOCIAL RENT	348	322
Total additional future housing units	**768**	**657**

ANNUAL NEED - YEARS 10 TO 15

Total households over the projection period who *may* afford:	Scenario 17	Scenario 18
OWNER OCCUPATION	77	51
PRIVATE RENT	95	71
BELOW MARKET RENT	113	84
SOCIAL RENT	104	77
Total additional future housing units	**389**	**283**

ANNUAL NEED - YEARS 15 TO 20

Total households over the projection period who *may* afford:	Scenario 17	Scenario 18
OWNER OCCUPATION	53	49
PRIVATE RENT	72	66
BELOW MARKET RENT	97	89
SOCIAL RENT	99	92
Total additional future housing units	**321**	**296**

CUMULATIVE TOTAL AT END OF PROJECTION PERIOD

Total households over the projection period who *may* afford:	Scenario 17	Scenario 18
OWNER OCCUPATION	2,125	1,750
PRIVATE RENT	2,495	2,090
BELOW MARKET RENT	2,640	2,205
SOCIAL RENT	4,485	4,115
Total additional future housing units	**11,745**	**10,160**

2.11   **Scenario 19 (Sc19) - incorporates the updated 2018 High Migration Projection – now using a base year of 2020. 10 years used to clear the same backlog of 2236**

2.12   **Scenario 20 (Sc 20) – as above but uses the Low Migration projection**

2.13   **Scenario 21 (Sc 21) – as above but uses the Principal Projection**

Comparison of High, Principal and Low Migration projections – Sc19, Sc20 and Sc 21
The three different projections suggest 20 year forward projections of need arising from changes in population and household formation of 7806 (High Migration), 6324 (Principal Projection) and 4937 (Low Migration). These three scenarios otherwise have exactly the same input parameters into the tool – clearing a backlog of 2236 households over 10 years. Obviously this leads to significantly more social and below market rent tenure properties in years 1 to 10.
Annual need figures in years 1-5 range from 714 to 806 depending on projections (224 of these being backlog clearance – typically in social rent tenure).
Over 20 years – accepting clearance of backlog in 10 years – the High Migration projection suggests a cumulative total of need and demand of 10035.

2.14   **Scenario 22 (Sc 22) – as Scenario 19 using the High Migration Projection, 10 year period for backlog clearance and additional in year need incorporated, as described in "Paper 2 – In Year Need". This includes an additional need of 194 households per year and forms the HNDA figure. This additional need is all expected to require social rent and below market rent tenure.**

2.15   **Comparison of Scenario 22 and Scenario 19.**
Both scenarios are identical using the NRS 2018 based High Migration projection and a start year of 2019/20. The table below shows the annual need (averaged over each 5 year group). In Scenario 22 – of the 194 additional "in year arising need" – 60 is allocated to "Below Market Rent" and 134 to "Social Rent" (the same proportions as applied by the HNDA tool.). This additional need is added over the full period of the projection.

The overall future housing units need for this scenario over 20 years is 13,915 units, compared to the total of 10,035 from Scenario 19 without this additional factor applied.

HOUSING NEED AND DEMAND ASSESSMENT

Key Findings Template: Estimate of Additional (New) Future Housing Units

		Number of years to clear existing need
Total households with **existing need (net)**	2,236	10

Household Projection Period

Period 2019/20 to 2038/39

	Scenario 19	Scenario 20	Scenario 21	Sc 22 – with "In year need" as used in this HNDA 2020
Total number of new **households** over the projection period	7,806	4,937	6,324	7,806

HNDA Projection Period

2019/20 to 2038/39 (Sc 19 to 22)

ANNUAL NEED - YEARS 1 TO 5

Total households over the projection period who *may* afford:	Scenario 19	Scenario 20	Scenario 21	**Scenario 22**
OWNER OCCUPATION	153	129	140	153
PRIVATE RENT	168	142	154	168
BELOW MARKET RENT	151	127	138	211
SOCIAL RENT	334	316	324	468
Total additional future housing units	806	714	756	1,000

ANNUAL NEED - YEARS 5 TO 10

Total households over the projection period who *may* afford:	Scenario 19	Scenario 20	Scenario 21	**Scenario 22**
OWNER OCCUPATION	90	59	74	90
PRIVATE RENT	104	68	86	104
BELOW MARKET RENT	107	70	88	167
SOCIAL RENT	312	281	296	446
Total additional future housing units	613	478	544	807

ANNUAL NEED - YEARS 10 TO 15

Total households over the projection period who *may* afford:	Scenario 19	Scenario 20	Scenario 21	**Scenario 22**
OWNER OCCUPATION	57	26	41	57
PRIVATE RENT	71	32	51	71
BELOW MARKET RENT	84	38	61	144
SOCIAL RENT	77	34	55	211
Total additional future housing units	289	130	208	483

ANNUAL NEED - YEARS 15 TO 20

Total households over the projection period who *may* afford:	Scenario 19	Scenario 20	Scenario 21	**Scenario 22**
OWNER OCCUPATION	49	19	34	49
PRIVATE RENT	67	25	46	67
BELOW MARKET RENT	90	34	61	150
SOCIAL RENT	93	35	63	227
Total additional future housing units	299	113	204	493

CUMULATIVE TOTAL AT END OF PROJECTION PERIOD

Total households over the projection period who *may* afford:	Scenario 19	Scenario 20	Scenario 21	**Scenario 22**
OWNER OCCUPATION	1,745	1,165	1,445	1,745
PRIVATE RENT	2,050	1,335	1,685	2,050
BELOW MARKET RENT	2,160	1,345	1,740	3,360
SOCIAL RENT	4,080	3,330	3,690	6,760
Total additional future housing units	10,035	7,175	8,560	13,915