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WALLABY pilot survey: the Tully–Fisher relation in the NGC 4808, Vela, and NGC 5044 fields

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ABSTRACT

The Tully–Fisher Relation (TFR) is a well-known empirical relationship between the luminosity of a spiral galaxy and its circular velocity, allowing us to estimate redshift independent distances. Here we use high signal-to-noise H I 21-cm integrated spectra from the second pilot data release (PDR2, 180 deg^2) of the Widefield ASKAP *L*-band Legacy All-sky Blind surveY (WALLABY). In order to prepare for the full WALLABY survey, we have investigated the TFR in phase 2 of the pilot survey with a further three fields. The data were obtained with wide-field Phased Array Feeds on the Australian Square Kilometre Array Pathfinder (ASKAP) and have an angular resolution of 30 arcsec and a velocity resolution of ∼4 km s^{-1}. Galaxy luminosities have been measured from the *Wide-field Infrared Survey Explorer*, and optical galaxy inclinations from the Dark Energy Camera Legacy Survey. We present TFRs for wavelengths from 0.8 to 3.4 μm. We examine sources of galaxy inclination data and investigate magnitudes from the DECam Local Volume Exploration Survey and DENIS catalogues and the 4HS target catalogue based on the VISTA Hemisphere Survey. We consider the baryonic TFR. These are all of interest for TFR using the full WALLABY survey of 200 000 galaxies. We demonstrate that WALLABY TFR distances can take their place among state-of-the-art studies of the local velocity field.

Key words: surveys – large scale structure of Universe.

1 INTRODUCTION

In the local Universe large-scale structure can be investigated using redshift-independent distance indicators, such as the Tully–Fisher Relation (TFR), which allow galaxies' peculiar velocities to be measured. Peculiar velocities come about because mass density inhomogeneities in the Universe act on galaxies and perturb the velocities given to them by the expansion of the Universe. To be exact, the peculiar velocity of a galaxy arises from the volume integral of the overdensities divided by the square of the distances to them, multiplied by the growth rate. Here the overdensity is $\delta = \delta\rho/\bar{\rho} - 1$, where ρ and $\bar{\rho}$ are the density and mean density of the Universe, and the growth rate, f, is approximately $\Omega_m^{4/7}$ in the ΛCDM standard model, where Ω_m is the mass density parameter. Peculiar velocities have therefore been used to constrain the cosmological parameter $f\sigma_8$ (σ_8 is the amplitude of the power spectrum on scales of $8h^{-1}$ Mpc; Adams & Blake 2017; Dupuy et al. 2019), thus providing a test of gravity on very large scales. To measure peculiar velocities we need redshift-independent distance indicators, such as the Fundamental Plane (Djorgovski & Davis 1987), the supernova standard candle (Kowal 1968), and the TFR (Tully & Fisher 1977).

The Widefield ASKAP *L*-band Legacy All-sky Blind surveY (or WALLABY; Koribalski et al. 2020) is being conducted on the Australian SKA Pathfinder (ASKAP; Hotan et al. 2021), an innovative imaging radio telescope located at the Murchison Radio astronomy Observatory in Western Australia. The aim of WALLABY is to use the powerful widefield phased-array technology of ASKAP to observe initially 14 000 deg^2 of the Southern hemisphere in the 21-cm line of neutral hydrogen at 30-arcsec resolution (Westmeier et al. 2022).[1] The survey began in 2023 January, but a number of fields were observed in 2022 as a pilot program, among them the phase 2 target fields centred on NGC 4808, Vela, and NGC 5044. WALLABY pilot survey phase 2 data were released in DR2 by Murugeshan et al. (2024).

The goals of this paper are first to learn as much as possible about the TFR early on, since the full WALLABY Survey will be a hundred times larger than the pilot survey, and, second, to

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[1] Sky coverage is described at https://wallaby-survey.org/overview/

measure peculiar velocities to be compared with expectations from the CosmicFlows program (Courtois & Tully 2015).

In the paper we extract and measure HI spectra of galaxies in these fields and combine them (Sections 2, 3, and 4) with customized *WISE* total magnitudes (Jarrett et al. 2023). Infrared photometry has the advantage of being less affected by extinction in our Galaxy and the target galaxies (Aaronson, Huchra & Mould 1979). We also investigate available *I*-band photometry and optical diameters. The utility of WALLABY for peculiar velocity measurement is considered in Section 5, and our conclusions are summarized in Section 6.

2 THE NGC 4808 FIELD

Source finding using SoFiA (Serra et al. 2015; Westmeier et al. 2021) and HI measurements for the NGC 4808 field follow Courtois et al. (2023; Paper 1). SoFiA2 uses the Smooth + Clip algorithm for source finding, which operates by spatially and spectrally smoothing the data on multiple scales and applying a user-defined flux threshold relative to the noise level in each iteration. A wide range of useful pre-conditioning and post-processing filters is available, including noise normalization, flagging of artefacts, and reliability filtering. Values of W_{50} were measured directly from the flux density versus frequency spectra produced by the WALLABY pipeline. All sources were inspected by Tobias Westmeier, and objects deemed to be questionable were deleted. An example would be an optical galaxy split in two by SoFiA. Over the three fields between 7 and 14 per cent of the sources were eliminated in this way. Half of these involve pairs or splits. It is customary to exclude such objects from the TFR. The effects of radio frequency interference are also trapped at this stage.

Table 1 reports the TFR data for the NGC 4808 field. Column (1) is the name of the WALLABY survey HI detection. Columns (2) & (3) are the SoFiA coordinates of the WALLABY HI detections. Column (4) is the mean velocity of the HI profile integrated over the spectrum. Column (5) is the axial ratio of the DECaLS[2] *g*-band galaxy image, which yields the inclination *i* of the disc. The axial ratio was measured at approximately 5 per cent of the sky background level with the ellipse task of IRAF.[3] A minimum axial ratio of 0.2 was adopted. Zeros denote galaxies for which no axial ratio could be measured.

Coordinates from the HyperLeda catalogue differ from WALLABY coordinates by 7.5 $\mathrm{arcsec_{rms}}$ after 2.5σ deviates were removed, with equal contributions from RA and Dec. The WALLABY beam diameter is 30 arcsec and this is a contributor.[4] In some cases there may also be a difference between the HI centroid and the centroid of the stellar light. Columns (6) & (7) are the *WISE*[5] W1 total galaxy magnitude after removal of contaminating stars and its uncertainty. Columns (8) & (9) are the width at half peak (or double peak) of the HI profile and its uncertainty. Column (10) is the signal to noise ratio of the HI profile. Column (11) provides other names for the source from the HyperLeda catalogue. Double identifications were eliminated by choosing the closer of the two galaxies. In the TFR we use Wmx, the width after correction for resolution and turbulence following Tully & Fouqué (1985). The velocity axis of the TFR is $\Delta V(0) = \mathrm{Wmx} / \sin i /(1 + z)$, where *i* is obtained from column (5)'s optical axial ratio. Nineteen galaxies have Wmx both measured from WALLABY and compiled by Tully et al. (2009, EDD, the Extragalactic Distance Database) and Courtois et al. (2009). The mean velocity width ratio, EDD/WALLABY, is 1.00 ± 0.01, and the χ^2 per degree of freedom for the identity relation is 0.27, indicating that for these bright galaxies the velocity width uncertainties have been overestimated. The velocity structure of the NGC4808 field is shown in Fig. 1. Some groups and filaments of galaxies are visible.

2.1 Comparison with Arecibo observations

Only a small portion of the WALLABY footprint protrudes into the Northern hemisphere. The NGC 4808 field therefore provides a rare opportunity to compare observations with those obtained by the Arecibo Observatory in the ALFALFA Survey (Haynes et al. 2018) and catalogued in EDD and labelled Wmx. Fig. 2 shows this comparison.

The measured redshifts of WALLABY and Arecibo are in good agreement. Although 6 per cent of the velocity widths are in disagreement by more than twice the joint uncertainty, this is no more than expected statistically. We note the more extreme cases, WALLABY J125258+073025, WALLABY J130412+43057, WALLABY J130012+054417, and WALLABY J130950+062601. Examination of the HI profiles of the discrepant galaxies reveals that both their WALLABY and ALFALFA profiles are of low signal to noise (S/N) and they are all distant, $cz > 10\,000$ km s^{-1}. Another way of looking at this comparison is in the lower section of Fig. 2. Here the *hyperfit* slope is significant, -0.072 ± 0.006.

2.2 TFR for the NGC 4808 field

The galaxy inclinations are calculated in the normal way

$$\cos^2 i = \frac{(b/a)^2 - 0.2^2}{1 - 0.2^2}, \quad (1)$$

where b/a is the axial ratio. The minimum axial ratio of 0.2 has been adopted since the original work of Tully & Fisher (1977). Paturel et al. (2003) listed no galaxies with $b/a < 0.25$ in their Principal Galaxies Catalogue. In Section A4 we note that we see exceptions with $b/a < 0.2$, but these are recorded in Table 1 as $b/a = 0.2$. This is not an issue, as they are clearly edge-on. We use the data of Table 1 to construct the TFR. Excluded from Fig. 3 are galaxies with inclinations less than 45 deg for which sin *i* is too uncertain, those with velocity width errors greater than 20 km s^{-1}, and those with S/N < 3.7. Absolute magnitudes were calculated with a Hubble Constant of 73 km s^{-1}Mpc^{-1} (Riess et al. 2022) after correction of heliocentric velocities to the cosmic microwave background frame, following Lineweaver et al. (1996). A simple least-squares linear fit to Fig. 3, excluding the outlier WALLABY J130436+045341 and 3 other 2.5σ deviates, gives a χ^2 per degree of freedom of 5.1, its difference from unity indicating that the velocity width uncertainties are partially responsible for the scatter in the TFR, but there is intrinsic scatter as well. In Section 4.2 we quantify the uncertainties in *i* which contribute 0.53 mag to the vertical errors, compared with 0.46 mag for the width uncertainties here. By comparison errors in W1 are negligible, growing slowly from 0.01 to 0.1 mag going from 14 to 17 mag in W1. We explore possible ways to reduce the uncertainties in *i* in the Appendix. A similar χ^2 is obtained from a fit with the *hyperfit* Bayesian regression package (Robotham & Obreschkow 2015), including an assumed Gaussian scatter of 200 km s^{-1} from

[2] https://datalab.noirlab.edu/ls/decals.php
[3] https://iraf-community.github.io
[4] Typical position uncertainties for HI point sources in WALLABY are estimated as the beam diameter (30 arcsec) divided by the source signal-to-noise, resulting in 7.5 arcsec uncertainty only for 4σ detections. Westmeier et al. (2022) found an *rms* of 5 arcsec in the phase 1 pilot survey
[5] Wright et al. (2010)

Table 1. WALLABY data and *WISE* photometry NGC 4808 field.

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J124747+042017	191.94598	4.33818	987	0.878	10.28	0.03	46	18	4.2	NGC 4688
WALLABY_J124805+065910	192.02299	6.98568	13424	0.760	12.83	0.02	130	19	2.1	PGC043228
WALLABY_J124822+082925	192.09509	8.49036	1011	0.666	7.35	0.01	424	19	2.9	NGC 4698
WALLABY_J124911+032310	192.29604	3.38610	722	0.739	9.50	0.01	167	16	6.0	NGC 4701
WALLABY_J124915+043926	192.31544	4.65741	2668	0.860	12.92	0.03	75	17	4.9	UGC 7976
WALLABY_J124923+050820	192.34853	5.13909	12410	0.725	13.83	0.01	212	25	1.8	PGC3395349
WALLABY_J124925+042328	192.35762	4.39118	2643	0.550	13.82	0.04	104	18	3.9	PGC1267592
WALLABY_J124935+033620	192.39824	3.60573	7085	0.897	12.46	0.01	166	18	4.3	PGC043361
WALLABY_J124937+074725	192.40498	7.79054	16420	0.739	14.94	0.02	273	19	2.0	
WALLABY_J124944+044608	192.43346	4.76898	8441	0.370	12.28	0.01	146	19	2.6	PGC043389
WALLABY_J124947+035042	192.44933	3.84521	698	0.440	13.75	0.03	35	17	5.4	UGC 7983
WALLABY_J124950+025100	192.45959	2.85022	1159	0.220	9.82	0.01	208	19	2.2	UGC 7982
WALLABY_J124957+040438	192.49109	4.07742	10202	0.680	13.60	0.02	218	18	4.1	PGC1263188
WALLABY_J124959+054921	192.49675	5.82272	630	0.720	13.80	0.02	109	18	3.3	PGC1289538
WALLABY_J125012+073442	192.55397	7.57855	11451	0.760	10.73	0.01	274	19	3.1	AGC225050
WALLABY_J125103+072753	192.76622	7.46492	15171	0.640	12.37	0.01	297	20	2.0	PGC1322513
WALLABY_J125112+045132	192.80307	4.85892	7532	0.884	10.18	0.01	233	18	3.5	NGC 4734
WALLABY_J125114+052031	192.81215	5.34211	7514	0.977	13.45	0.02	74	17	4.6	AGC225201
WALLABY_J125121+063829	192.84126	6.64150	14998	0.740	14.21	0.02	124	17	5.4	PGC1304685
WALLABY_J125127+054748	192.86482	5.79682	14439	0.710	12.50	0.01	455	19	2.6	PGC1289326
WALLABY_J125133+080241	192.88995	8.04494	3597	0.888	13.49	0.08	130	18	4.0	PGC043556
WALLABY_J125134+055147	192.89421	5.86332	14592	0.674	12.03	0.02	401	24	1.8	PGC1290429
WALLABY_J125156+035954	192.98697	3.99838	7684	0.574	15.41	0.02	206	28	1.7	PGC1261946
WALLABY_J125211+043045	193.04642	4.51261	19307	0.790	13.03	0.01	271	19	2.6	PGC4345126
WALLABY_J125215+042728	193.06422	4.45782	696	0.570	15.42	0.11	57	19	2.5	AGC226122
WALLABY_J125224+071046	193.10010	7.17953	14948	0.325	13.73	0.03	230	17	6.6	PGC1315615
WALLABY_J125233+031517	193.13998	3.25474	14620	0.666	12.38	0.01	295	22	1.9	PGC1248106
WALLABY_J125243+075643	193.17969	7.94529	11588	0.740	13.27	0.02	201	22	1.9	PGC1335032
WALLABY_J125258+073025	193.24283	7.50694	16023	0.790	12.56	0.02	421	19	3.0	PGC043729
WALLABY_J125303+070944	193.26555	7.16228	15196	0.600	16.16	0.06	111	19	2.3	PGC5509705
WALLABY_J125308+081035	193.28596	8.17653	14834	0.490	16.03	0.05	123	41	1.1	PGC434576
WALLABY_J125311+032639	193.29700	3.44418	2789	0.900	16.54	0.20	29	19	2.6	PGC166147
WALLABY_J125313+042746	193.30641	4.46279	725	0.688	10.35	0.01	87	16	6.2	NGC 4765
WALLABY_J125334+060947	193.39287	6.16324	13460	0.410	12.69	0.02	160	19	2.5	
WALLABY_J125339+040434	193.41631	4.07620	887	0.710	14.69	0.04	40	18	3.7	AGC224229
WALLABY_J125340+064728	193.42010	6.79115	7630	0.808	11.88	0.01	206	19	2.2	PGC043817
WALLABY_J125341+034603	193.42392	3.76761	19644	0.851	13.03	0.02	145	19	3.0	PGC1258221
WALLABY_J125343+040920	193.43007	4.15566	772	0.825	14.74	0.05	39	19	2.6	PGC1264260
WALLABY_J125413+052149	193.55656	5.36375	14499	0.544	12.01	0.01	312	19	2.6	PGC4676508
WALLABY_J125419+064115	193.57948	6.68763	3633	0.785	13.64	0.01	92	27	1.7	PGC3091848
WALLABY_J125431+050959	193.63210	5.16657	19563	0.604	12.72	0.01	484	45	1.0	PGC1279102
WALLABY_J125443+050110	193.68056	5.01958	10661	0.533	16.33	0.08	120	18	3.4	
WALLABY_J125443+080310	193.68300	8.05288	2520	0.715	11.23	0.01	243	19	3.1	NGC 4791
WALLABY_J125445+045357	193.69009	4.89937	7453	0.650	15.17	0.06	123	19	2.8	PGC1274939
WALLABY_J125450+072542	193.71011	7.42845	15011	0.617	13.43	0.01	274	25	1.8	PGC1321584
WALLABY_J125500+051140	193.75122	5.19446	19741	0.790	15.73	0.03	79	18	4.5	PGC3480219
WALLABY_J125507+040229	193.78165	4.04148	14467	0.972	12.04	0.01	91	19	2.7	PGC1262572
WALLABY_J125509+075453	193.79150	7.91487	2655	0.551	12.18	0.02	178	18	3.7	UGC 8042
WALLABY_J125515+081543	193.81377	8.26203	21390	0.850	12.30	0.01	169	17	4.9	PGC1343076
WALLABY_J125516+025347	193.81685	2.89662	2803	0.664	9.59	0.01	365	18	3.3	NGC 4799
WALLABY_J125520+050620	193.83734	5.10573	10706	0.548	13.85	0.02	200	21	1.9	PGC3480237
WALLABY_J125548+041805	193.95232	4.30158	760	0.537	8.71	0.02	269	15	7.7	NGC 4808
WALLABY_J125548+045901	193.95166	4.98387	14632	0.525	12.33	0.01	430	18	4.3	PGC1276334
WALLABY_J125549+040049	193.95634	4.01383	712	0.518	12.24	0.03	124	17	5.5	UGC 8053
WALLABY_J125556+075542	193.98351	7.92859	12464	0.495	12.68	0.01	299	34	1.4	PGC4538018
WALLABY_J125603+045202	194.01451	4.86747	1375	0.800	14.06	0.05	42	17	4.5	PGC5057592
WALLABY_J125604+034843	194.01933	3.81209	619	0.640	16.16	0.08	92	17	5.0	UGC 8055
WALLABY_J125604+064914	194.01678	6.82073	3612	0.473	13.28	0.09	110	18	3.6	PGC5059716
WALLABY_J125605+053051	194.02489	5.51423	7129	0.414	13.81	0.02	242	19	2.7	PGC1284669
WALLABY_J125618+052020	194.07797	5.33915	19252	0.713	12.20	0.01	441	23	1.8	PGC044133
WALLABY_J125620+052836	194.08336	5.47686	7300	0.856	11.04	0.01	290	23	1.9	PGC4538029
WALLABY_J125627+060352	194.11592	6.06457	11510	0.594	11.76	0.01	424	19	2.7	PGC044139
WALLABY_J125631+071846	194.12994	7.31281	12846	0.834	13.57	0.02	161	17	6.4	PGC5511816

Table 1 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J125636+030211	194.15128	3.03650	18856	0.773	14.03	0.08	193	20	2.0	PGC3092329
WALLABY_J125646+034002	194.19191	3.66735	2801	0.799	15.92	0.07	49	19	2.4	PGC5808030
WALLABY_J125646+074748	194.19365	7.79669	15054	0.908	12.44	0.01	223	18	3.5	PGC044179
WALLABY_J125647+055350	194.19743	5.89740	14269	0.816	14.42	0.02	167	19	2.6	PGC1290833
WALLABY_J125647+055512	194.19923	5.92000	9509	0.800	15.40	0.03	183	18	4.0	Mk 1340
WALLABY_J125652+045727	194.21909	4.95752	7344	0.776	14.56	0.03	174	19	2.2	PGC1318860
WALLABY_J125652+071852	194.21896	7.31450	12886	0.680	14.66	0.04	275	21	1.9	PGC1275923
WALLABY_J125656+040352	194.23692	4.06460	827	0.627	12.45	0.02	97	17	5.4	AGC222260
WALLABY_J125716+052221	194.32011	5.37260	11157	0.810	15.38	0.04	84	24	1.8	PGC4002979
WALLABY_J125716+060334	194.32027	6.05951	14369	0.735	12.71	0.02	303	17	4.7	PGC1293863
WALLABY_J125718+045929	194.32613	4.99151	886	0.750	18.13	0.28	47	19	3.2	PGC5060294
WALLABY_J125734+035519	194.39226	3.92213	7064	0.686	14.91	0.06	181	16	6.2	PGC1260735
WALLABY_J125743+024130	194.43323	2.69176	924	0.730	12.92	0.03	98	19	3.0	UGC 8074
WALLABY_J125752+034320	194.47067	3.72229	7107	0.655	14.09	0.02	170	18	3.9	PGC044384
WALLABY_J125753+065307	194.47372	6.88535	20637	0.710	13.37	0.01	124	22	1.9	
WALLABY_J125811+045429	194.54819	4.90821	10694	0.617	14.60	0.02	190	18	3.4	PGC1275089
WALLABY_J125814+033205	194.56168	3.53476	3545	0.800	16.06	0.09	109	33	1.5	
WALLABY_J125814+061724	194.56088	6.29020	18344	0.920	12.00	0.01	141	22	1.9	PGC044427
WALLABY_J125821+045311	194.58934	4.88659	10895	0.937	11.37	0.01	100	19	2.7	PGC4538067
WALLABY_J125822+041824	194.59354	4.30688	14252	0.760	13.56	0.02	49	19	3.2	PGC1266417
WALLABY_J125822+043843	194.59480	4.64552	7356	0.743	16.14	0.14	125	18	3.3	PGC4349181
WALLABY_J125823+024727	194.59700	2.79107	2775	0.835	11.72	0.02	121	19	2.6	UGC 8084
WALLABY_J125834+054735	194.64520	5.79322	11582	0.630	14.99	0.05	125	22	1.9	PGC1289286
WALLABY_J125851+052229	194.71259	5.37480	12732	0.822	13.52	0.02	231	19	2.2	PGC1282330
WALLABY_J125938+062651	194.90871	6.44775	6356	0.412	15.14	0.06	186	18	4.3	AGC228010
WALLABY_J125939+045140	194.91350	4.86117	13393	0.660	14.42	0.04	164	19	3.2	PGC1274383
WALLABY_J125941+054304	194.92183	5.71788	19004	0.780	13.38	0.02	138	19	2.5	PGC3395504
WALLABY_J125941+072959	194.92293	7.49982	8517	0.620	12.27	0.01	253	19	2.7	PGC044655
WALLABY_J125941+031433	194.92343	3.24251	14235	0.714	13.13	0.02	155	18	3.4	PGC5350917
WALLABY_J125948+045800	194.95161	4.96689	7222	0.700	14.70	0.03	73	19	2.2	PGC4003010
WALLABY_J125952+033800	194.96796	3.63340	1035	0.795	15.18	0.05	49	21	1.9	PGC3395480
WALLABY_J125953+041831	194.97215	4.30879	16025	0.810	12.03	0.01	281	38	1.3	PGC044669
WALLABY_J130011+065105	195.04974	6.85139	9781	1.000	–	–	46	23	1.8	
WALLABY_J130012+054417	195.05286	5.73817	14519	0.600	13.11	0.02	110	18	3.3	PGC1288333
WALLABY_J130026+070758	195.10907	7.13284	16805	0.633	14.57	0.03	244	19	2.1	PGC1314573
WALLABY_J130030+071721	195.12535	7.28922	12471	0.497	12.51	0.01	330	19	2.9	PGC1318163
WALLABY_J130031+083118	195.13069	8.52193	15583	0.446	16.14	0.07	132	19	3.0	PGC1348504
WALLABY_J130034+052831	195.14525	5.47541	16156	0.710	15.28	0.02	164	19	2.3	PGC4350758
WALLABY_J130043+071159	195.18289	7.19989	16788	0.699	14.74	0.03	212	19	2.1	PGC1316087
WALLABY_J130055+070243	195.23233	7.04543	18426	0.740	12.16	0.01	298	29	1.6	PGC1312616
WALLABY_J130100+025004	195.25089	2.83448	6991	0.710	13.55	0.02	162	19	2.2	PGC1238647
WALLABY_J130116+045403	195.31804	4.90094	14387	0.670	13.29	0.02	181	19	2.7	PGC1274980
WALLABY_J130119+053553	195.33031	5.59822	25741	0.855	12.05	0.01	136	40	1.2	
WALLABY_J130130+064803	195.37645	6.80106	18833	0.850	15.25	0.01	115	19	2.5	PGC1307704
WALLABY_J130143+031600	195.42964	3.26676	14417	0.744	11.55	0.01	104	27	1.7	PGC5953193
WALLABY_J130143+040835	195.43141	4.14305	11213	0.710	14.36	0.03	108	19	2.6	PGC1264099
WALLABY_J130147+053426	195.44879	5.57400	16303	0.580	14.88	0.02	172	19	2.4	PGC3402860
WALLABY_J130148+045931	195.45251	4.99204	11840	0.450	11.70	0.01	477	19	3.1	UGC 8138
WALLABY_J130150+041953	195.46014	4.33143	11249	0.958	10.90	0.01	240	18	4.3	CGCG43-99
WALLABY_J130153+052307	195.47398	5.38538	14542	0.667	14.82	0.02	161	18	4.2	PGC5060296
WALLABY_J130158+030601	195.49202	3.10043	6992	0.443	12.85	0.01	235	34	1.4	ECO06197
WALLABY_J130214+055401	195.56105	5.90032	14701	0.552	16.43	0.08	117	18	4.0	
WALLABY_J130216+060128	195.56932	6.02466	14761	0.630	16.42	0.24	230	19	2.7	PGC1293209
WALLABY_J130216+063321	195.56824	6.55597	3500	0.776	13.90	0.01	105	18	3.6	
WALLABY_J130224+032233	195.60036	3.37582	7014	0.649	13.85	0.03	196	20	2.0	PGC1250994
WALLABY_J130237+044721	195.65746	4.78918	13686	0.643	14.08	0.02	292	17	7.7	PGC1273218
WALLABY_J130241+055729	195.67451	5.95827	2865	0.596	14.37	0.02	148	18	3.6	PGC1292036
WALLABY_J130247+064707	195.69934	6.78528	7141	0.430	12.87	0.01	284	29	1.6	UGC 8149
WALLABY_J130254+055411	195.72546	5.90329	2889	0.560	15.90	0.06	70	17	5.5	
WALLABY_J130305+035925	195.77486	3.99038	2862	0.504	13.71	0.01	127	16	5.8	UGC 8153
WALLABY_J130312+080017	195.80318	8.00476	17652	0.909	14.07	0.02	61	18	3.6	PGC1334565
WALLABY_J130315+074816	195.81306	7.80448	2932	0.814	10.48	0.01	242	18	4.0	UGC 8155
WALLABY_J130316+044405	195.81924	4.73494	13714	0.576	12.97	0.01	352	17	4.8	PGC1272482

Table 1 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J130322+073646	195.84378	7.61281	3067	0.650	14.78	0.03	98	19	2.0	PGC1326378
WALLABY_J130330+081941	195.87859	8.32813	6425	0.630	14.40	0.10	144	21	2.0	AGC230034
WALLABY_J130331+075810	195.88287	7.96943	13967	0.827	12.89	0.01	282	26	1.8	PGC045100
WALLABY_J130338+075404	195.90974	7.90119	13840	0.633	12.06	0.01	210	41	1.1	PGC045112
WALLABY_J130339+043644	195.91290	4.61243	8713	0.650	14.35	0.02	174	19	2.6	
WALLABY_J130342+055733	195.92755	5.95925	18698	0.770	13.70	0.02	199	19	2.2	PGC1292087
WALLABY_J130344+061920	195.93703	6.32236	14403	0.499	14.49	0.03	267	18	4.2	PGC1298528
WALLABY_J130345+044031	195.93834	4.67533	19097	0.870	14.03	0.02	155	17	6.3	PGC1271594
WALLABY_J130349+072123	195.95441	7.35642	5990	0.870	15.28	0.02	164	18	3.4	
WALLABY_J130358+054204	195.99194	5.70119	14648	0.420	11.42	0.01	629	18	3.9	UGC 8165
WALLABY_J130400+040855	196.00259	4.14874	19191	1.000	99.00	99.00	89	18	3.8	
WALLABY_J130401+045203	196.00702	4.86766	19028	0.780	12.47	0.01	124	26	1.8	PGC045152
WALLABY_J130406+044139	196.02571	4.69436	13642	0.720	15.67	0.05	188	35	1.4	
WALLABY_J130407+053333	196.03059	5.55936	7093	0.510	15.67	0.05	173	19	2.6	PGC1285388
WALLABY_J130410+052910	196.04471	5.48636	2821	0.694	15.96	0.02	144	18	4.1	
WALLABY_J130412+043057	196.05379	4.51587	12506	0.740	14.10	0.02	183	19	2.5	PGC1269294
WALLABY_J130419+081330	196.07970	8.22510	17657	1.000	14.46	0.02	72	19	2.2	
WALLABY_J130428+043155	196.11856	4.53206	7077	0.740	13.84	0.02	217	19	2.8	PGC3092185
WALLABY_J130436+045341	196.15047	4.89476	14436	0.410	12.72	0.01	83	17	7.4	
WALLABY_J130438+034245	196.16013	3.71261	11439	0.620	12.25	0.01	400	20	2.0	PGC045206
WALLABY_J130438+061203	196.16022	6.20107	11486	0.532	13.03	0.02	339	23	1.8	PGC1296339
WALLABY_J130440+075733	196.16719	7.95924	14138	0.570	12.81	0.01	289	18	4.3	PGC045213
WALLABY_J130445+062514	196.18800	6.42059	14269	0.780	15.81	0.03	177	19	2.1	
WALLABY_J130453+034934	196.22235	3.82637	12271	0.570	11.41	0.01	221	18	3.5	
WALLABY_J130504+071549	196.26997	7.26382	18447	0.706	14.18	0.02	252	26	1.7	PGC1317607
WALLABY_J130510+053040	196.29184	5.51124	7260	0.650	16.88	0.09	83	19	2.1	
WALLABY_J130512+034927	196.30318	3.82437	14451	0.600	13.89	0.02	157	27	1.7	PGC214062
WALLABY_J130512+083423	196.30396	8.57306	7153	0.680	13.41	0.03	125	24	1.8	PGC1349483
WALLABY_J130522+043840	196.34213	4.64461	14054	0.910	12.27	0.01	225	18	3.3	PGC045268
WALLABY_J130535+041627	196.39659	4.27442	13143	0.552	13.41	0.01	312	21	1.9	PGC1265937
WALLABY_J130535+051140	196.39771	5.19462	13114	0.820	14.26	0.02	169	19	2.7	PGC1279581
WALLABY_J130544+073310	196.43407	7.55282	18599	0.904	12.43	0.01	190	24	1.8	PGC045305
WALLABY_J130555+033208	196.48183	3.53575	13104	0.700	15.85	0.04	159	32	1.5	
WALLABY_J130558+035723	196.49553	3.95656	7008	0.380	10.40	0.01	493	19	2.4	UGC 8186
WALLABY_J130609+040911	196.54060	4.15321	11924	0.658	13.51	0.02	295	32	1.5	PGC1264218
WALLABY_J130620+040901	196.58716	4.15039	7045	0.666	15.54	0.12	144	18	3.8	
WALLABY_J130635+042739	196.64600	4.46091	6380	0.800	14.84	0.03	204	19	2.4	PGC1268532
WALLABY_J130646+070404	196.69385	7.06797	17070	0.650	13.52	0.01	218	19	2.5	PGC1313190
WALLABY_J130656+074407	196.73595	7.73549	8843	0.600	14.37	0.02	256	19	2.9	PGC092953
WALLABY_J130658+065934	196.74524	6.99293	20771	0.862	13.02	0.02	175	19	3.0	PGC1311625
WALLABY_J130659+042805	196.74728	4.46812	11859	0.490	16.28	0.06	201	19	2.8	
WALLABY_J130659+045802	196.74881	4.96748	12836	0.664	14.05	0.01	196	18	4.0	
WALLABY_J130705+031317	196.77119	3.22160	14481	0.333	14.28	0.03	331	18	3.5	
WALLABY_J130727+044550	196.86629	4.76391	14073	0.631	13.50	0.02	447	19	3.1	PGC1347951
WALLABY_J130727+082924	196.86465	8.49021	16365	0.430	11.97	0.01	184	23	1.9	
WALLABY_J130738+041709	196.91002	4.28608	7319	0.681	16.80	0.21	139	37	1.3	
WALLABY_J130739+062006	196.91310	6.33518	7156	0.676	10.60	0.01	351	17	4.8	UGC 8204
WALLABY_J130739+075909	196.91528	7.98594	6049	0.890	15.83	0.08	71	19	2.8	
WALLABY_J130802+062900	197.01071	6.48335	7138	0.640	11.22	0.01	366	19	2.8	PGC045508
WALLABY_J130810+044441	197.04335	4.74483	5855	0.550	14.38	0.02	117	19	2.9	
WALLABY_J130812+062455	197.05315	6.41547	7240	0.660	14.68	0.03	123	18	4.2	AGC238734
WALLABY_J130813+034746	197.05650	3.79621	5973	0.895	13.40	0.02	81	18	3.6	
WALLABY_J130813+053320	197.05453	5.55566	14179	0.630	16.86	0.22	106	19	2.2	PGC1285323
WALLABY_J130813+064248	197.05722	6.71349	13617	0.660	16.15	0.07	121	19	2.5	
WALLABY_J130826+064302	197.10902	6.71741	14831	0.554	12.52	0.01	333	27	1.7	PGC1306115
WALLABY_J130844+040942	197.18744	4.16177	8803	0.800	14.59	0.01	137	19	2.9	PGC045570
WALLABY_J130844+044424	197.18378	4.74010	13152	0.940	11.06	0.01	219	19	2.9	PGC1272531
WALLABY_J130852+055946	197.21939	5.99622	3576	0.360	14.85	0.05	116	22	1.9	
WALLABY_J130901+072007	197.25659	7.33553	6368	0.820	14.69	0.02	98	19	2.4	
WALLABY_J130903+065753	197.26357	6.96477	13728	0.605	11.73	0.01	118	19	3.1	PGC045592
WALLABY_J130904+081148	197.26694	8.19692	7139	0.633	14.95	0.03	129	19	2.2	
WALLABY_J130905+055109	197.27478	5.85262	7221	0.569	13.50	0.02	232	18	3.4	PGC045595
WALLABY_J130906+051433	197.27740	5.24274	3599	0.810	15.42	0.04	134	18	4.2	

Table 1 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J130916+025905	197.31998	2.98488	11482	0.609	12.86	0.02	206	30	1.6	PGC1242530
WALLABY_J130923+065940	197.34761	6.99461	3638	0.630	9.71	0.02	260	17	5.7	UGC 8233
WALLABY_J130942+061307	197.42725	6.21874	12805	0.758	12.46	0.01	257	19	2.3	
WALLABY_J130950+062601	197.46217	6.43363	11694	0.790	11.38	0.01	254	19	2.5	PGC045662
WALLABY_J131113+065134	197.80789	6.85944	6199	1.000	16.50	0.08	109	18	3.7	
WALLABY_J131122+032431	197.84378	3.40868	3052	0.392	12.96	0.02	189	18	4.3	UGC 8263
WALLABY_J131145+075645	197.93781	7.94608	19559	0.880	13.29	0.02	145	19	2.2	
WALLABY_J131206+052832	198.02628	5.47557	915	0.500	13.97	0.02	70	18	4.2	UGC 8276
WALLABY_J131207+031203	198.03058	3.20104	8283	0.860	11.39	0.01	118	19	2.3	NGC 5013
WALLABY_J131208+025916	198.03513	2.98803	3037	0.292	13.48	0.01	176	19	2.3	UGC 8275
WALLABY_J131232+071059	198.13741	7.18316	902	0.429	11.92	0.01	124	18	4.4	UGC 8285
WALLABY_J131320+060327	198.33711	6.05774	7053	0.935	10.50	0.01	217	18	3.9	NGC 5027

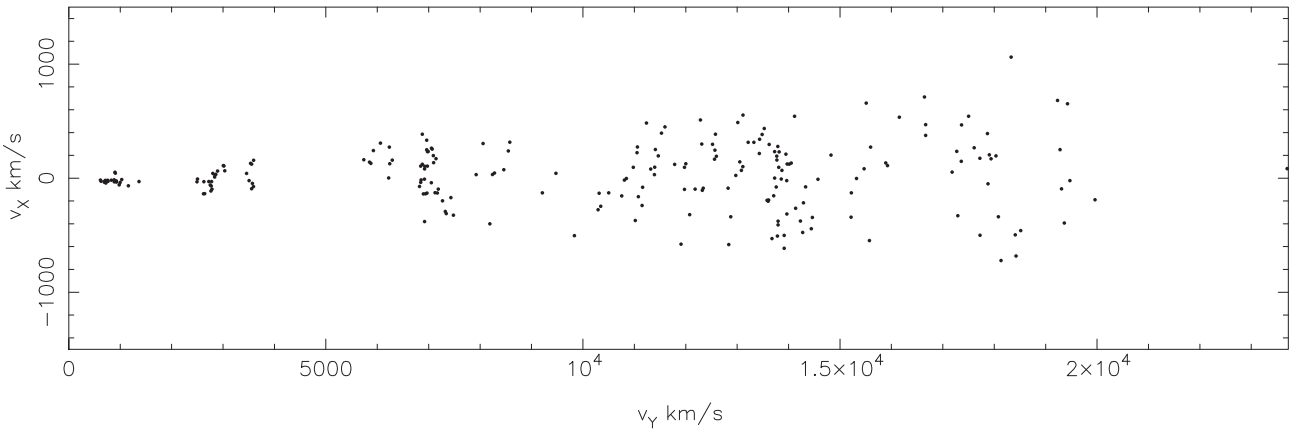

Figure 1. WALLABY galaxies in the NGC4808 field in the supergalactic plane. The long axis is the heliocentric recession velocity in the SGY direction, and the vertical axis is the the heliocentric recession velocity in the SGX direction. The structure is evident in galaxy groups and filaments.

peculiar velocities. *Hyperfit* maximizes the likelihood of a linear fit in the presence of uncertainties in both coordinates. This is an important distinction from a least-squares fit, when there is a range of errors in the data. Unbiased estimators for the population model of the vertical scatter and its variance can be obtained. The website interface to *Hyperfit* was accessed at hyperfit.icrar.org. The intrinsic scatter in the TFR measured by *hyperfit* is 0.85 mag. Selection biases may also affect the fit, but these are not investigated here.

Photometry for galaxies with names in column (11) of Table 1 is also available from the Siena Galaxy Atlas (Moustakas et al. 2023). This is presented in the Appendix.

2.3 Star formation

The W1 *WISE* bandpass has some sensitivity to PAH emission (Cluver et al. 2017) and so we have examined the W1–W2 colour in this sample. Fig. 4 shows that the vast majority of these H I detections has W1–W2 < 0.2 mag, making it unlikely that there is a significant number of starburst galaxies in the sample. We have located galaxies with W1–W2 > 0.25 mag in the TFR of Fig. 3 and only one of them, WALLABY J130903+065753 is significantly discrepant in the TFR (on the high luminosity side.) It may be a starburst galaxy.

2.4 Baryonic TFR

For galaxies with a large H I mass relative to their stellar mass it stands to reason that adding it to the stellar mass will make a good alternative TFR (McGaugh et al. 2000). For our sample the H I mass is a product of the template science code[6] run after the SoFiA pipeline and correction for the WALLABY flux deficit, and the stellar mass in solar masses can be calculated from

$$\log M_* = -0.04 + 1.12\ \log \mathrm{L_{W1}} \qquad (2)$$

(Wen et al. 2013), where L_{W1} is the 3.4μ luminosity in solar units. We also considered the stellar mass formula of Cluver et al. (2014). That formula gives a stellar mass larger by a factor 1.42±0.02 than Wen's, and we have not used it because the uncertainties in *WISE* W2 are 50 per cent larger than in W1.[7] The H I mass is multiplied by 1.3 to account approximately for other species (McGaugh et al. 2021), and corrected to the H_0 value used for M_*. Fig. 5 is the baryonic TFR for galaxies with cz $< 10\,000$ km s^{-1}. With four 2.5σ deviates removed, the scatter about the linear least-squares fit and about the *hyperfit*

[6]carnaby.aussrc.org:/mnt/shared/wallaby/notebooks/WALLABY_notebooks/user_science.ipynb

[7]The procedure described in the Appendix makes this choice moot in the use of the BTFR for CosmicFlows4.

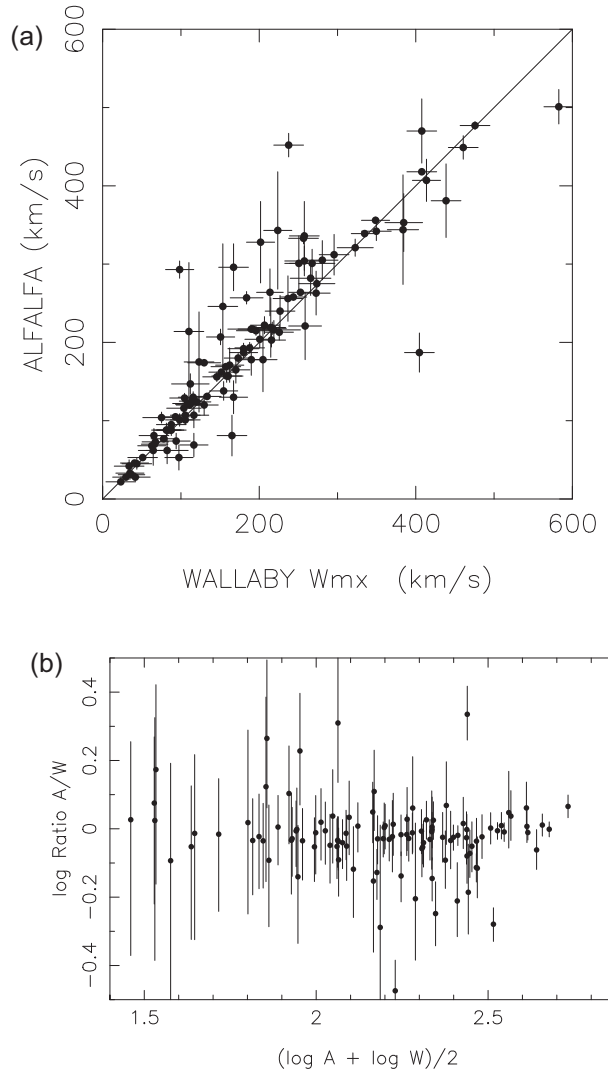

Figure 2. (a) Comparisons of velocity widths from Table 1 and those from ALFALFA. (b) A = ALFALFA, W = WALLABY. The vertical axis essentially shows the difference between WALLABY and ALFALFA velocity widths.

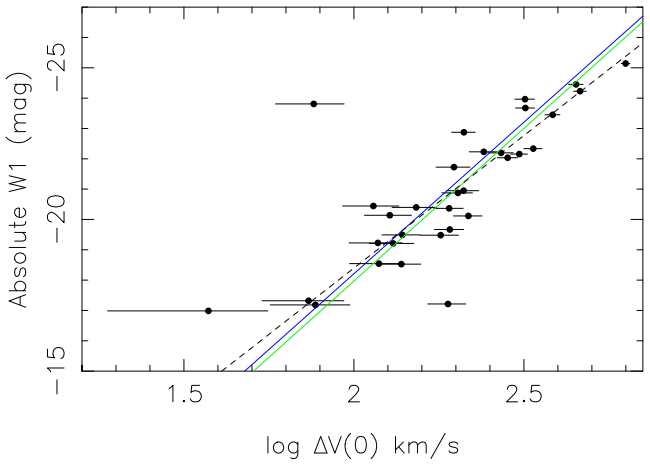

Figure 3. TFR for the NGC4808 field. The dashed line is the best unweighted linear fit; the green line is the result from *hyperfit*, which weights the fitted points by their uncertainties and allows for intrinsic scatter. The blue (steeper) is the TFR of Bell et al. (2023).

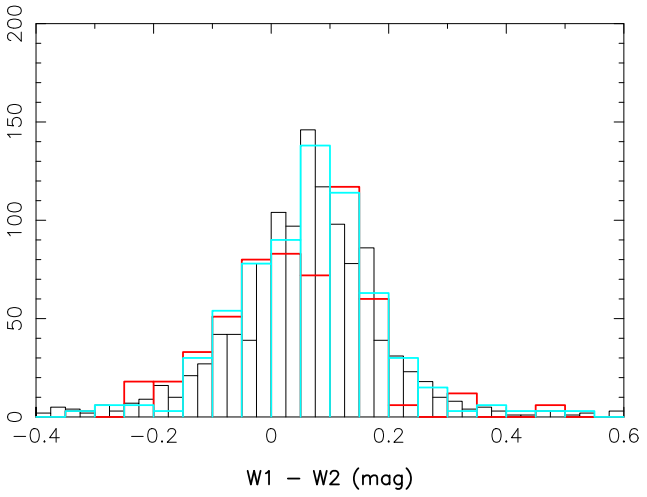

Figure 4. Distribution of W1–W2 colours for the galaxies in Table 1 (blue). The Vela and NGC 5044 fields are shown in red and black, respectively. Vela and NGC 4808 have been upscaled by a factor of 3 for ease of comparison.

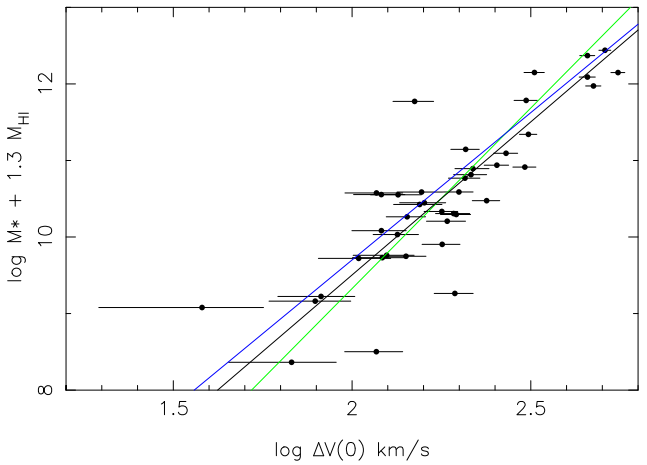

Figure 5. Baryonic TFR for galaxies in the NGC 4808 field with cz < 10 000 km s^{-1}. The vertical axis is the sum of stellar and gas masses. The black line has slope 4. The green line is the *hyperfit* with slope 4.45 ± 0.29. The blue line is from Lelli et al. (2019).

is 0.25 dex or 0.63 ± 0.14 mag, compared with 0.65 ± 0.13 mag for the W1 TFR. Although the baryonic TFR is an alternative to the W1 TFR, it seems to be equal, rather than superior, for the purposes of measuring peculiar velocities.

3 TFR FOR THE VELA FIELD

Table 2 contains the optical, infrared, and radio data for the Vela field, centred on 10^h 3^m and –45^d 36^m, and has the same format as Table 1. The structure of this field is shown in Fig. 6, strengthened by redshifts from the overlapping region of the MeerKAT Vela supercluster survey (Rajohnson et al. (2024), and the TFR for the field with S/N > 3 is shown in Fig. 7. We dropped the S/N threshold from that used in the previous field because of the smaller number of galaxies available. The vertical scatter for a linear fit excluding the lowest velocity width galaxy WALLABY J095710-485624, which is an outlier, is 0.86 mag. Although the Vela field is at low Galactic latitude (–8 deg), it proved possible to measure accurate W1 total magnitudes by removing superposed stars. The field is close to the

Table 2. WALLABY data and *WISE* photometry Vela field.

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J094317-452105	145.82089	−45.35157	5340	0.313	14.04	0.13	229	17	5.7	–
WALLABY_J094325-453019	145.85829	−45.50539	12065	0.616	13.72	0.05	251	18	3.7	–
WALLABY_J094333-452200	145.89011	−45.36670	18231	0.511	11.49	0.02	143	19	2.6	PGC527583
WALLABY_J094429-464515	146.12170	−46.75434	17251	0.499	13.55	0.05	277	19	2.3	–
WALLABY_J094524-480828	146.35260	−48.14116	880	0.200	14.56	0.09	75	15	8.0	–
WALLABY_J094533-462130	146.39050	−46.35859	7502	0.430	15.30	0.07	114	18	3.4	PGC515934
WALLABY_J094613-471709	146.55690	−47.28599	14082	0.500	12.57	0.05	217	18	4.3	–
WALLABY_J094622-463856	146.59392	−46.64899	2704	0.300	11.18	0.02	291	16	6.7	–
WALLABY_J094723-431306	146.84944	−43.21851	5318	0.479	12.93	0.03	154	32	1.7	–
WALLABY_J094814-464424	147.05835	−46.74026	17507	0.422	14.26	0.02	218	17	5.7	–
WALLABY_J094819-442224	147.08121	−44.37339	18139	0.281	12.27	0.01	272	35	2.0	PGC538024
WALLABY_J094828-472216	147.11841	−47.37133	17106	0.470	12.35	0.01	297	19	2.5	PGC502430
WALLABY_J094830-464320	147.12833	−46.72243	17352	0.548	14.02	0.04	249	17	4.5	PGC511516
WALLABY_J094840-452959	147.16727	−45.49980	13467	0.226	13.01	0.02	376	19	3.1	–
WALLABY_J094854-462741	147.22504	−46.46154	17222	0.536	13.28	0.02	279	19	3.2	–
WALLABY_J094855-435404	147.23100	−43.90133	19445	0.873	13.13	0.02	350	17	4.6	PGC543149
WALLABY_J094924-454230	147.35231	−45.70839	5284	0.378	12.88	0.03	98	18	4.5	–
WALLABY_J094926-435730	147.36195	−43.95849	19448	0.859	13.61	0.02	203	18	4.0	–
WALLABY_J094940-454322	147.41983	−45.72292	16372	0.290	11.68	0.01	458	19	2.3	PGC096455
WALLABY_J094959-481705	147.49632	−48.28491	5212	0.220	12.10	0.03	270	16	6.1	PGC489114
WALLABY_J095019-452605	147.57959	−45.43482	12136	0.506	11.70	0.01	192	19	2.2	PGC309881
WALLABY_J095019-441017	147.58247	−44.17142	19387	0.864	12.99	0.02	120	19	2.5	PGC309880
WALLABY_J095031-461322	147.63036	−46.22299	13532	0.385	16.03	0.06	220	18	4.5	PGC517483
WALLABY_J095053-432902	147.72421	−43.48414	2699	0.717	14.04	0.05	151	31	3.8	PGC548188
WALLABY_J095101-451536	147.75775	−45.26022	11295	0.274	14.65	0.05	161	18	4.5	PGC528651
WALLABY_J095126-452831	147.85852	−45.47532	12124	0.341	13.48	0.02	269	17	5.0	PGC526385
WALLABY_J095131-440121	147.88051	−44.02256	13106	0.415	12.22	0.01	477	19	2.5	PGC028395
WALLABY_J095159-443357	147.99901	−44.56604	19297	1.000	15.02	0.03	101	19	2.2	–
WALLABY_J095205-443809	148.02348	−44.63591	18041	0.536	12.68	0.01	254	32	1.5	PGC535167
WALLABY_J095211-464251	148.04860	−46.71441	13589	0.321	13.47	0.02	294	17	4.8	PGC511580
WALLABY_J095234-475517	148.14436	−47.92139	17230	0.738	13.98	0.03	150	15	7.3	–
WALLABY_J095239-470647	148.16661	−47.11310	1820	0.900	13.03	0.07	73	19	2.0	PGC506395
WALLABY_J095244-474722	148.18340	−47.78953	5390	0.390	13.92	0.10	115	18	3.6	PGC495718
WALLABY_J095311-451624	148.29988	−45.27333	11263	0.762	13.69	0.04	206	19	3.1	PGC528542
WALLABY_J095316-431054	148.31738	−43.18174	18933	0.600	14.28	0.02	89	22	1.9	–
WALLABY_J095347-455759	148.44792	−45.96661	7089	0.200	11.14	0.01	367	19	2.4	PGC028528
WALLABY_J095354-433845	148.47746	−43.64592	7727	0.432	14.19	0.03	175	17	4.8	–
WALLABY_J095423-443318	148.59874	−44.55511	10029	0.853	13.65	0.04	150	18	3.5	PGC536076
WALLABY_J095433-440456	148.63873	−44.08222	17770	0.948	13.77	0.02	270	19	2.8	–
WALLABY_J095441-440640	148.67125	−44.11118	17882	0.483	12.71	0.02	252	19	2.3	PGC540776
WALLABY_J095448-462159	148.70078	−46.36654	7074	0.824	12.91	0.02	186	17	5.0	PGC515876
WALLABY_J095449-461903	148.70421	−46.31764	16160	0.721	14.67	0.04	275	19	2.4	PGC516415
WALLABY_J095457-480416	148.73886	−48.07116	11541	0.561	11.82	0.02	440	18	3.5	PGC308536
WALLABY_J095532-443931	148.88661	−44.65867	18673	0.799	11.88	0.01	336	18	3.5	PGC534960
WALLABY_J095552-455731	148.96976	−45.95863	12425	0.781	14.85	0.04	93	18	4.0	–
WALLABY_J095558-472929	148.99477	−47.49157	19141	0.933	14.40	0.02	120	15	7.9	–
WALLABY_J095635-453219	149.14613	−45.53882	13794	0.531	14.43	0.03	174	18	3.8	–
WALLABY_J095648-450253	149.20219	−45.04817	19190	0.438	15.53	0.04	228	19	2.3	–
WALLABY_J095710-485624	149.29468	−48.94017	3727	0.250	12.83	0.04	40	16	6.5	PGC580713
WALLABY_J095719-465024	149.32941	−46.84004	13024	0.617	13.56	0.02	277	19	3.1	–
WALLABY_J095802-444730	149.51060	−44.79173	23768	0.729	14.67	0.02	244	36	3.7	PGC533495
WALLABY_J095809-472057	149.54031	−47.34937	3644	0.896	14.38	0.05	124	17	5.6	–
WALLABY_J095813-430817	149.55484	−43.13825	7307	0.396	14.88	0.06	184	18	3.9	–
WALLABY_J095824-433328	149.60017	−43.55786	18236	0.608	12.85	0.01	130	19	2.1	PGC547363
WALLABY_J095836-470454	149.65350	−47.08191	3628	0.412	10.89	0.01	109	19	3.2	–
WALLABY_J095848-455156	149.70287	−45.86573	3664	0.598	12.09	0.01	196	18	4.0	–
WALLABY_J095901-480714	149.75763	−48.12066	12519	0.380	13.47	0.05	282	19	3.1	–
WALLABY_J095917-440347	149.82159	−44.06321	17036	0.272	12.81	0.01	129	27	1.7	PGC541310
WALLABY_J095936-452856	149.90266	−45.48230	2356	0.361	14.58	0.08	131	16	5.9	PGC526313
WALLABY_J100001-443326	150.00504	−44.55744	12877	0.227	12.30	0.01	421	17	5.0	–
WALLABY_J100036-465940	150.15273	−46.99455	3692	0.357	14.09	0.04	127	16	6.4	PGC508004
WALLABY_J100050-445210	150.21181	−44.86969	12407	0.619	13.85	0.03	141	19	2.2	–
WALLABY_J100102-481259	150.26187	−48.21657	12677	0.599	14.46	0.03	144	18	4.2	–

Table 2 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J100123-434533	150.34853	−43.75939	3550	0.745	11.85	0.04	119	16	6.1	PGC029008
WALLABY_J100143-441338	150.42950	−44.22723	4101	0.538	16.19	0.10	136	16	6.0	–
WALLABY_J100151-454502	150.46483	−45.75065	18068	0.721	13.01	0.02	184	19	2.1	PGC523231
WALLABY_J100212-445101	150.55185	−44.85052	3432	0.453	19.05	0.82	63	18	4.4	–
WALLABY_J100221-454646	150.58833	−45.77956	3562	0.200	14.15	0.04	213	17	5.6	–
WALLABY_J100239-452950	150.66278	−45.49748	3510	0.618	10.35	0.01	270	16	5.9	PGC029089
WALLABY_J100246-465217	150.69533	−46.87149	12802	0.390	12.23	0.01	414	19	2.6	PGC509584
WALLABY_J100311-424909	150.79733	−42.81932	4651	0.470	11.14	0.01	156	17	4.6	–
WALLABY_J100317-440128	150.82349	−44.02466	3481	0.363	14.60	0.02	164	17	5.6	–
WALLABY_J100352-443211	150.97017	−44.53648	3439	0.448	10.20	0.01	263	17	4.7	–
WALLABY_J100415-445304	151.06564	−44.88451	23540	0.894	14.20	0.02	164	19	2.9	PGC532640
WALLABY_J100421-442527	151.08768	−44.42443	3805	0.667	11.63	0.01	156	18	4.3	PGC096465
WALLABY_J100423-452230	151.09895	−45.37511	4396	0.647	14.82	0.03	104	19	3.1	–
WALLABY_J100426-455138	151.11151	−45.86071	18113	0.516	11.84	0.01	390	18	4.3	PGC521908
WALLABY_J100437-490338	151.15500	−49.06054	3411	0.280	13.63	0.04	173	18	3.8	PGC279219
WALLABY_J100442-444506	151.17860	−44.75192	23521	0.692	12.77	0.02	129	27	1.7	–
WALLABY_J100444-443016	151.18584	−44.50465	23561	0.541	14.55	0.05	69	24	1.8	–
WALLABY_J100451-435701	151.21263	−43.95051	18064	0.613	14.01	0.01	205	18	4.0	–
WALLABY_J100452-452932	151.21869	−45.49232	19449	0.529	13.07	0.01	379	19	2.2	–
WALLABY_J100508-445144	151.28745	−44.86230	3821	0.720	16.61	0.08	63	18	4.1	PGC532877
WALLABY_J100509-444852	151.29138	−44.81458	3830	0.750	14.60	0.03	107	15	7.9	PGC533322
WALLABY_J100535-465131	151.39697	−46.85884	11126	0.562	15.87	0.30	113	19	2.5	–
WALLABY_J100541-471231	151.42436	−47.20887	17650	0.727	12.49	0.01	332	19	2.4	–
WALLABY_J100542-442711	151.42656	−44.45322	3344	0.632	13.36	0.02	144	17	5.6	PGC537153
WALLABY_J100542-480241	151.42740	−48.04488	4016	0.449	12.55	0.03	261	16	6.2	PGC492019
WALLABY_J100550-441338	151.45985	−44.22725	3316	0.648	10.90	0.02	328	15	7.1	ESO263-00
WALLABY_J100552-450111	151.47003	−45.01976	4009	0.627	10.55	0.02	143	19	2.9	PGC096467
WALLABY_J100610-464716	151.54491	−46.78801	11234	0.549	13.15	0.01	289	18	4.3	–
WALLABY_J100629-462816	151.62482	−46.47112	11768	0.662	13.70	0.02	224	19	2.3	PGC514620
WALLABY_J100645-474147	151.69096	−47.69658	4040	0.707	9.95	0.01	302	17	5.0	–
WALLABY_J100647-473156	151.69655	−47.53226	12973	0.971	15.81	0.05	130	18	3.4	–
WALLABY_J100656-450242	151.73479	−45.04507	3906	0.518	9.70	0.01	376	15	7.6	–
WALLABY_J100700-430434	151.75406	−43.07624	6122	0.220	9.84	0.01	632	18	4.2	–
WALLABY_J100707-460954	151.78003	−46.16518	18504	0.906	14.44	0.05	114	18	3.7	–
WALLABY_J100713-445637	151.80502	−44.94361	3857	0.419	13.85	0.03	169	18	4.2	–
WALLABY_J100732-471911	151.88405	−47.31973	3361	0.367	13.02	0.02	121	18	4.2	–
WALLABY_J100733-460851	151.89146	−46.14756	17945	0.246	12.59	0.01	457	19	2.5	PGC518439
WALLABY_J100739-471949	151.91318	−47.33031	13409	0.226	12.85	0.05	326	18	1.6	–
WALLABY_J100743-445722	151.93034	−44.95629	10538	0.514	12.21	0.01	183	17	4.8	–
WALLABY_J100745-462101	151.93825	−46.35028	18671	0.458	13.88	0.03	111	35	2.3	–
WALLABY_J100745-432954	151.94040	−43.49845	3174	0.200	12.19	0.02	194	15	7.4	–
WALLABY_J100748-430145	151.95158	−43.02940	6254	0.629	14.23	0.06	133	16	5.8	–
WALLABY_J100801-473847	152.00577	−47.64656	3351	0.200	13.73	0.03	185	16	0.0	–
WALLABY_J100817-475436	152.07130	−47.91020	2660	0.311	16.33	0.09	93	18	4.1	–
WALLABY_J100820-483803	152.08733	−48.63440	2755	0.534	14.02	0.05	129	19	2.1	–
WALLABY_J100847-430256	152.19995	−43.04894	4476	0.250	12.74	0.02	214	18	3.3	ESO263-00
WALLABY_J100850-443119	152.20981	−44.52206	5323	0.440	14.77	0.25	177	18	4.3	PGC536414
WALLABY_J100913-430010	152.30492	−43.00299	4554	0.310	10.58	0.01	229	19	2.6	ESO263-01
WALLABY_J100916-430948	152.31908	−43.16335	4440	0.830	13.11	0.05	41	16	6.0	ESO263-01
WALLABY_J100936-450306	152.40045	−45.05173	3726	0.501	16.15	0.04	98	19	2.0	–
WALLABY_J100944-434707	152.43665	−43.78531	10158	0.477	11.06	0.01	703	18	3.7	PGC308537
WALLABY_J101000-462652	152.50197	−46.44778	13080	0.802	13.80	0.03	86	18	4.1	PGC514893
WALLABY_J101031-470644	152.62990	−47.11234	2686	0.200	14.93	0.08	136	16	6.9	–
WALLABY_J101036-433659	152.65163	−43.61655	18305	0.607	11.89	0.01	673	29	1.6	–
WALLABY_J101053-473338	152.72466	−47.56057	6375	0.444	14.42	0.03	65	19	3.0	PGC499417
WALLABY_J101057-473250	152.74144	−47.54725	4301	0.520	15.36	0.04	151	32	8.0	PGC499417
WALLABY_J101059-450851	152.74696	−45.14754	4040	0.504	9.33	0.01	284	16	6.0	ESO263-01
WALLABY_J101102-453912	152.75923	−45.65337	18226	0.313	12.71	0.01	112	19	2.8	–
WALLABY_J101113-435133	152.80550	−43.85932	6234	0.633	14.96	0.05	125	16	6.3	–
WALLABY_J101115-432421	152.81583	−43.40585	19283	0.691	13.27	0.02	206	19	2.5	–
WALLABY_J101143-455557	152.92976	−45.93257	1914	1.000	14.99	0.08	70	17	5.7	–
WALLABY_J101144-455153	152.93427	−45.86474	18160	0.244	12.19	0.01	450	19	2.4	PGC521896
WALLABY_J101144-430308	152.93703	−43.05223	3063	0.652	14.56	0.02	96	19	2.8	–

Table 2 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J101214-430504	153.05885	−43.08451	15056	0.919	16.09	0.04	92	18	3.5	–
WALLABY_J101219-471739	153.08167	−47.29433	2528	0.200	9.34	0.01	359	15	7.4	–
WALLABY_J101232-451408	153.13596	−45.23571	4115	0.692	10.60	0.01	203	14	8.5	–
WALLABY_J101237-425619	153.15567	−42.93872	2992	0.320	15.22	0.16	159	31	2.6	–
WALLABY_J101239-444058	153.16582	−44.68278	19710	0.715	13.56	0.02	129	18	3.5	–
WALLABY_J101303-440332	153.26260	−44.05902	6263	0.200	15.09	0.07	175	19	2.7	–
WALLABY_J101312-484049	153.30225	−48.68048	13883	0.329	14.40	0.05	210	17	5.5	–
WALLABY_J101329-444504	153.37157	−44.75116	3676	0.580	15.29	0.08	63	18	3.9	PGC534018
WALLABY_J101331-434904	153.37953	−43.81793	4213	0.733	9.60	0.02	287	17	4.9	ESO263-01
WALLABY_J101333-432720	153.39140	−43.45554	4559	0.400	11.37	0.01	288	18	3.9	ESO263-02
WALLABY_J101423-432437	153.59843	−43.41049	2919	1.000	13.99	0.06	100	18	3.6	PGC549098
WALLABY_J101442-445108	153.67599	−44.85238	1104	0.611	9.86	0.02	93	17	5.6	ESO263-02
WALLABY_J101448-433152	153.70114	−43.53131	3065	0.510	12.30	0.01	121	17	5.0	ESO263-02
WALLABY_J101457-433710	153.73779	−43.61966	3041	0.459	9.63	0.01	410	16	6.6	PGC029915
WALLABY_J101500-464718	153.75160	−46.78858	6552	0.475	14.64	0.01	244	19	2.5	–
WALLABY_J101628-455103	154.11888	−45.85088	1914	0.330	13.13	0.03	95	18	3.7	PGC030004
WALLABY_J101703-442447	154.26443	−44.41311	4951	0.923	12.15	0.01	104	19	2.0	–

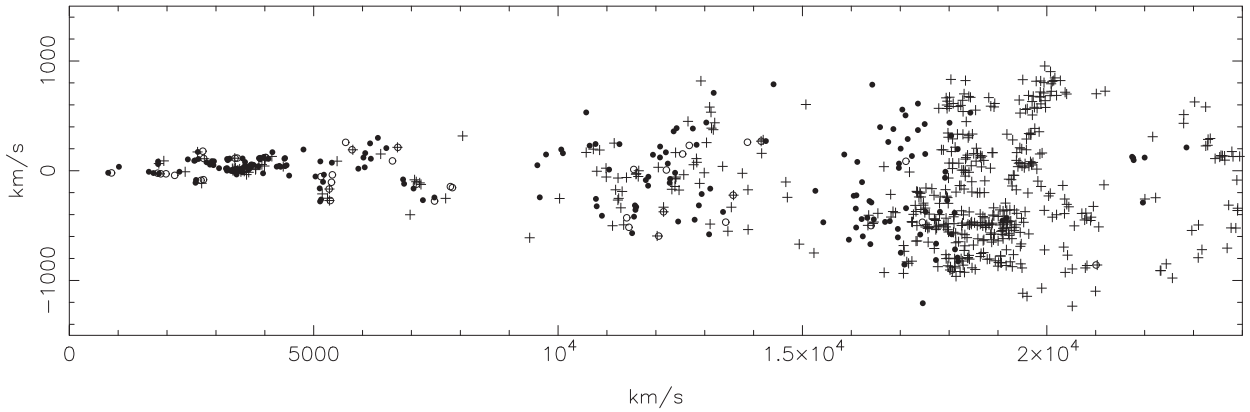

Figure 6. WALLABY Vela galaxies in the supergalactic plane. The long axis is the heliocentric recession velocity in the SGY direction, the vertical axis, the SGX direction. The dynamically significant Vela Supercluster identified by Kraan-Korteweg et al. (2017) and Courtois et al. (2019) is visible at 18 000 km s^{-1}within WALLABY's range. Redshifts from Table 2 are solid symbols, MeerKAT redshifts (Rajohnson et al. 2024) are open symbols, and published and forthcoming optical Vela redshifts are plus signs.

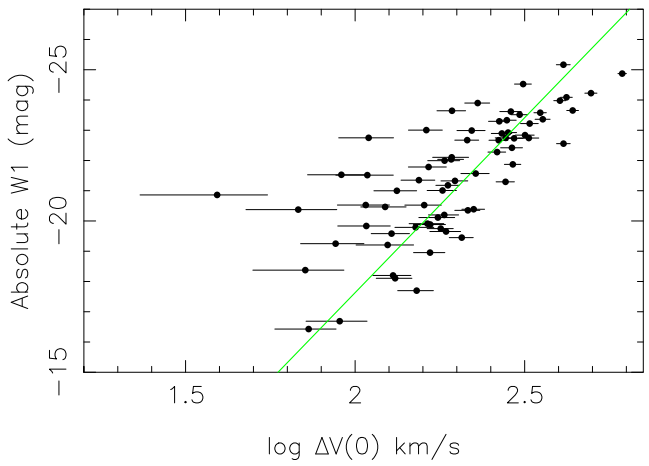

Figure 7. TFR for the Vela field. The line is the *hyperfit*.

centre of the Laniakea Supercluster (Tully et al. 2014), and will be of importance in the study of the velocity field in this region. We defer this to a future study when adjacent fields can be included.

4 THE NGC 5044 FIELD

This field is the largest of the pilot survey at 120 deg^2. Its structure is shown in Fig. 8. The WALLABY and *WISE* data are in Table 3, which has the same format as Table 1, and the TFR is Fig. 9. Where the galaxy seemed too round to warrant ellipse fitting, a zero appears in the axial ratio column of Table 3. Zeros were also recorded in the fairly rare case that the source was just outside the boundaries of the closest DECaLS image. Comparison with published data from Nancay, Greenbank and Parkes (Tully et al. 2009, EDD, Springob et al. 2009; Theureau et al. 2007; and Koribalski et al. 2004) is in Tables 4 and 5 and Figs 10 and 11, which compare WALLABY velocities with published velocities and WALLABY velocity widths with published velocity widths, respectively.Where there are two published H I profiles, both are plotted in the figures. The last two

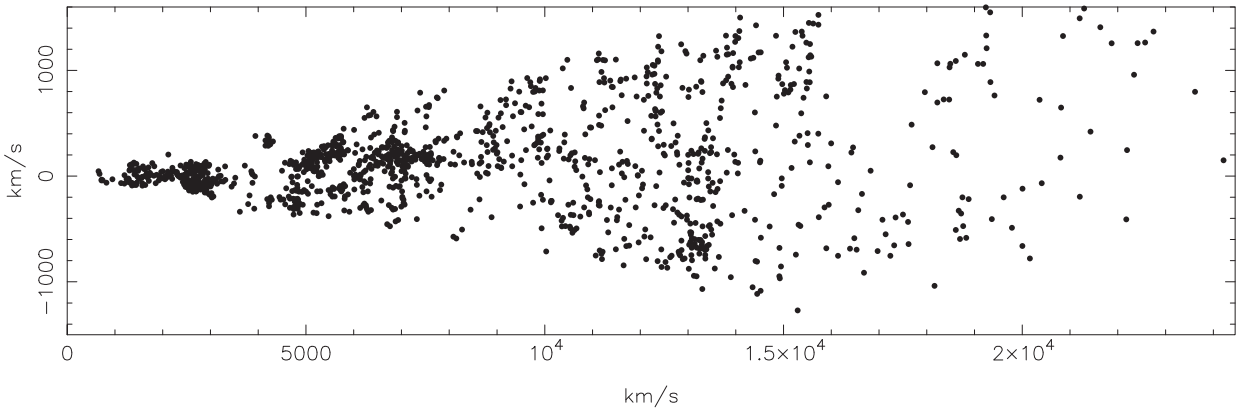

Figure 8. WALLABY galaxies from the NGC 5044 field in the supergalactic plane. The long axis is the heliocentric recession velocity in the SGY direction. The vertical axis is the SGX coordinate.

columns of these tables are the WALLABY values from Table 3. The comparison is good. With the three most deviant points in Fig. 11 removed, there is an offset of 2 ± 2 km s^{-1} from the dashed line. The velocity widths in Tables 4 and 5 and Figs 10 and 11 have not been corrected for resolution and turbulence.

The fitted TFRs in our three WALLABY fields are similar to one another within the errors.

Fu (2024) has developed a Lucy rectification algorithm for cases where axial ratios are highly uncertain, which produces a TFR based on the statistical distribution of galaxy inclinations. We applied this algorithm to the NGC 5044 field, as it offered by far the largest sample. One starts with an initial un-inclination-corrected (M_{W1}, W_{50}) plane, and the algorithm then converges and reduces the scatter. However, the scatter in the final statistical TFR obtained was 1.79 mag rms, compared with 1.08 mag in Fig. 9 with the sin i term included. Although it would save a lot of painstaking measurements with uncertainties that are not well characterized, we elected not to use this algorithm. Axial ratio information is valuable for WALLABY TFR data.

4.1 HyperLeda diameters

The Principal Galaxies Catalogue (PGC; Paturel et al. 1993) is a very good match to WALLABY source lists with 1173 out of 1672 sources with PGC or other bright galaxy names in Tables 1–3 (70 per cent). Paturel et al. (2003) have measured diameters and axis ratios on the RC2 system (de Vaucouleurs et al. 1976) at a limiting surface brightness of 25 B magnitudes per arcsec^2. A related 21 cm galaxy scaling relation to the TFR is that between diameter and velocity width. PGC galaxies have D_{25} and R_{25} in HyperLeda (Makarov et al. 2014), and so the diameters can be corrected to uniform face-on surface brightness by a prescription in the RC2. For a Hubble Constant of 73 km s^{-1}Mpc^{-1} the relation is shown in Fig. 12. The scatter in the relation is 0.18 dex, which is equivalent to 0.9 mag in the standard candle version of the TFR, since δd/d = (ln 10)δ logD, where d is distance and D is diameter, whereas 2δd/d = 0.4(ln 10)δm, where m is magnitude. Nevertheless, the diameter relation is competitive in this context, and opens the possibility of using both luminosity and diameter information along with velocity width. That would be analogous to the fundamental plane for early-type galaxies. *Hyperfit* reports a significant correlation between diameter and axial ratio uncertainty, in the sense that the largest physical diameter galaxies have 0.14 larger R_{25} uncertainties than those ten times smaller, but this would not[8] seem to act to suppress the scatter in Fig. 12. If the luminosity TFR and the diameter TFR are used jointly as they stand, however, errors in velocity width and inclination will produce errors in distance that correlate.

4.2 Kinematic inclinations

Deg et al. (2022) and Murugeshan et al. (2024) have made kinematic maps, including rotation curves, of many WALLABY galaxies, 108 of which are in this work. In this work the inclinations of two flat disc models (FAT and 3DBAROLO) are averaged together and the uncertainty is set to half the difference between the two fits. In the flat disc algorithm geometric parameters are averaged across all radii. We have matched those with the galaxies in Tables 1–3 and the comparison of inclinations is shown in Fig. 13. The solid correlation gives us confidence in our ellipse fitted axial ratios. There is also a good correlation between the axial ratios in Table 3 and HyperLeda axial ratios (Fig. 14). If we assume the inclinations derived from Table 3 have an uncertainty of 12.5 degrees, we obtain $\chi^2 = 1$ in a 1:1 fit. There is no significant offset between kinematic and axial ratio inclinations down to the 1 degree level. Further discussion of axial ratios is in the Appendix.

4.3 I and J magnitudes

An additional resource is the DECam Local Volume Exploration Survey (DELVE DR2 catalogue; Drlica-Wagner et al. 2022). We explore this because W1 total magnitudes may not be available for the volume of data generated by the full WALLABY survey. To reduce multiple matching, PGC positions were used, and cuts were made to SExtractor parameters (Bertin & Arnouts 1999) semimajor axis ($>$ 5 arcsec), g magnitude ($<$ 19), and positional error $<$ 15 arcsec. Where multiple matching occurred, the closest galaxy to the PGC position was taken to be the match. Inspection of the DECaLS images confirmed that this is an effective procedure in finding the galaxy that is most likely to be the H I source. A TFR is shown in Fig. 15, where the i magnitude is mag_auto_i and the axial ratio is b_image_g/ a_image_g. The correlation is strong, as seen in Table 6, where the hyperfit χ^2 is shown. The *rms* difference

[8]A change of 0.14 in R_{25} of 0.14 only makes a difference of 2 degrees in inclination on average.

Table 3. WALLABY data and *WISE* photometry NGC 5044 field.

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J125700-171910	194.25180	−17.31950	3972	0.620	11.65	0.01	220	19	2.6	PGC044234
WALLABY_J125706-182159	194.27628	−18.36646	16185	0.706	11.29	0.01	88	29	1.6	ESO575-036
WALLABY_J125757-130339	194.48877	−13.06087	5022	0.556	9.53	0.01	215	19	2.8	NGC4838
WALLABY_J125834-164819	194.64464	−16.80551	3843	0.386	13.61	0.01	147	19	3.1	PGC044478
WALLABY_J125836-161333	194.65154	−16.22606	5266	0.000	12.41	0.01	131	19	2.7	–
WALLABY_J125843-170913	194.67995	−17.15386	8361	0.485	12.88	0.01	318	19	2.6	PGC044499
WALLABY_J125848-114647	194.70290	−11.77985	4849	0.200	13.61	0.02	154	19	2.2	PGC104987
WALLABY_J125850-145324	194.71039	−14.89014	4874	0.330	14.38	0.02	144	18	4.1	PGC918593
WALLABY_J125855-142319	194.73131	−14.38869	19381	0.000	19.04	0.46	148	18	3.4	–
WALLABY_J125859-135141	194.74915	−13.86140	4883	0.496	15.01	0.02	55	19	2.1	PGC932206
WALLABY_J125907-121329	194.77928	−12.22482	1312	0.430	13.37	0.03	80	16	6.0	PGC044549
WALLABY_J125910-161749	194.79179	−16.29707	12931	0.686	13.15	0.02	180	19	3.0	PGC899955
WALLABY_J125912-182326	194.80096	−18.39075	15297	0.000	14.13	0.01	89	19	2.1	PGC868681
WALLABY_J125912-124101	194.80396	−12.68385	3875	0.389	14.65	0.03	134	17	4.5	PGC949183
WALLABY_J125923-120455	194.84590	−12.08215	6349	0.460	12.24	0.01	191	18	4.5	PGC3082105
WALLABY_J125930-135159	194.87573	−13.86649	13996	0.000	13.58	0.01	97	18	3.4	PGC932150
WALLABY_J125930-180055	194.87677	−18.01554	4959	0.430	15.59	0.06	120	17	4.6	PGC873976
WALLABY_J125930-120652	194.87744	−12.11468	6387	0.960	12.91	0.01	129	17	4.7	PGC957468
WALLABY_J125931-140755	194.87987	−14.13200	6451	0.759	11.50	0.01	145	17	4.9	NGC4862
WALLABY_J125932-182203	194.88594	−18.36763	15110	0.603	13.85	0.02	119	17	4.9	–
WALLABY_J125932-151419	194.88669	−15.23881	1418	0.571	12.78	0.01	95	19	2.1	PGC3082108
WALLABY_J125939-145813	194.91435	−14.97029	4953	0.221	10.80	0.01	360	17	5.2	PGC044645
WALLABY_J125940-151600	194.91905	−15.26692	4860	0.914	13.54	0.01	97	19	2.7	PGC913440
WALLABY_J125942-140140	194.92767	−14.02790	4368	0.466	10.64	0.01	462	18	3.6	NGC4863
WALLABY_J125942-164952	194.92847	−16.83133	1368	0.450	15.81	0.07	43	18	4.2	–
WALLABY_J125943-150804	194.93118	−15.13447	13409	0.945	15.41	0.05	86	19	2.5	PGC915253
WALLABY_J125945-145159	194.93814	−14.86639	2659	0.398	13.20	0.01	147	19	2.7	PGC918920
WALLABY_J125949-200826	194.95747	−20.14056	13972	0.000	14.17	0.02	52	29	1.6	–
WALLABY_J125951-150446	194.96494	−15.07954	12208	0.676	13.05	0.02	271	18	3.4	PGC916026
WALLABY_J125956-192430	194.98334	−19.40843	826	0.360	14.48	0.03	45	16	6.7	PGC044681
WALLABY_J125959-143124	194.99905	−14.52352	2576	0.247	13.79	0.01	67	17	4.7	PGC923490
WALLABY_J130004-154055	195.01862	−15.68214	1135	0.200	14.47	0.05	121	18	3.3	PGC907834
WALLABY_J130004-152151	195.02060	−15.36439	1589	0.200	10.74	0.01	117	18	4.3	PGC044701
WALLABY_J130010-130042	195.04393	−13.01183	4735	0.201	11.64	0.01	166	19	2.6	PGC044718
WALLABY_J130016-170140	195.06892	−17.02799	4908	0.416	11.14	0.01	240	19	3.0	PGC170439
WALLABY_J130017-122041	195.07176	−12.34494	1581	0.596	11.20	0.01	168	16	6.1	PGC044735
WALLABY_J130018-115758	195.07573	−11.96620	15261	0.978	11.69	0.01	181	18	3.3	PGC959514
WALLABY_J130026-151708	195.10945	−15.28555	4920	0.345	8.74	0.01	600	17	4.9	NGC4877
WALLABY_J130029-181400	195.12294	−18.23359	14628	0.810	15.99	0.05	98	19	2.1	–
WALLABY_J130029-133942	195.12305	−13.66192	6392	0.310	16.35	0.07	76	40	1.2	–
WALLABY_J130029-133839	195.12349	−13.64420	4331	0.265	12.62	0.01	158	19	3.0	PGC044776
WALLABY_J130032-123039	195.13338	−12.51109	6359	0.680	14.34	0.01	136	17	5.3	PGC951730
WALLABY_J130033-122307	195.14067	−12.38545	2500	0.750	16.43	0.13	45	16	5.8	PGC953585
WALLABY_J130037-143948	195.15587	−14.66346	2701	0.562	10.61	0.01	150	17	5.5	NGC4887
WALLABY_J130043-185429	195.18138	−18.90821	10404	0.498	14.43	0.03	225	17	5.1	PGC862238
WALLABY_J130043-154253	195.18234	−15.71495	1383	0.000	11.74	0.02	85	17	4.9	PGC044812
WALLABY_J130044-142906	195.18745	−14.48505	6422	0.200	14.48	0.03	181	17	5.1	PGC924035
WALLABY_J130047-130944	195.19746	−13.16238	18291	0.631	13.71	0.01	264	18	4.1	PGC941853
WALLABY_J130047-141534	195.19971	−14.25961	4596	0.880	15.48	0.05	117	17	4.8	–
WALLABY_J130049-143608	195.20488	−14.60221	6500	0.550	11.60	0.01	259	18	4.3	PGC3098292
WALLABY_J130049-170522	195.20738	−17.08964	4826	0.485	16.45	0.03	101	19	2.3	–
WALLABY_J130052-164149	195.21719	−16.69698	4286	0.919	15.21	0.04	79	19	2.9	–
WALLABY_J130052-145506	195.21899	−14.91849	13859	0.200	14.99	0.04	78	19	3.1	–
WALLABY_J130053-132655	195.22302	−13.44861	2551	0.531	9.37	0.01	230	16	6.1	NGC4897
WALLABY_J130056-135640	195.23347	−13.94450	2654	0.677	9.25	0.01	277	16	6.2	NGC4899
WALLABY_J130057-172247	195.23891	−17.37990	4889	0.731	14.74	0.03	87	18	3.3	PGC884267
WALLABY_J130059-143042	195.24770	−14.51192	2624	0.000	7.87	0.01	240	16	6.3	NGC4902
WALLABY_J130105-165505	195.27188	−16.91831	13552	0.287	13.81	0.01	312	19	2.7	PGC891633
WALLABY_J130107-133053	195.28215	−13.51473	1306	0.500	14.02	0.02	62	15	7.6	PGC936912

Table 3 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J130108-181149	195.28737	−18.19711	4848	0.796	9.55	0.01	278	17	5.2	ESO575-047
WALLABY_J130109-141528	195.28949	−14.25782	2720	0.392	14.06	0.01	162	18	4.1	PGC927002
WALLABY_J130113-170851	195.30450	−17.14753	13210	0.759	16.57	0.10	34	19	2.3	PGC888117
WALLABY_J130121-194538	195.34113	−19.76081	12157	0.713	15.22	0.01	171	19	2.6	–
WALLABY_J130121-133904	195.34135	−13.65130	9163	0.615	13.90	0.02	228	18	4.1	PGC935042
WALLABY_J130123-151152	195.34808	−15.19778	12144	0.513	11.82	0.01	389	18	4.1	PGC914458
WALLABY_J130130-151321	195.37512	−15.22272	4851	0.210	15.65	0.02	158	19	2.8	PGC914086
WALLABY_J130132-190935	195.38405	−19.15984	13144	0.542	11.85	0.01	388	19	3.2	PGC859036
WALLABY_J130132-154057	195.38747	−15.68254	4944	0.330	13.77	0.02	191	17	5.1	PGC907873
WALLABY_J130133-191211	195.38782	−19.20318	13023	0.491	19.01	0.58	215	18	3.8	PGC858502
WALLABY_J130133-192537	195.38843	−19.42708	11658	0.269	15.29	0.04	157	19	3.1	–
WALLABY_J130143-175939	195.42987	−17.99439	3102	0.612	15.78	0.07	76	17	5.4	PGC874285
WALLABY_J130148-114530	195.45346	−11.75856	5937	0.666	12.11	0.01	267	19	2.0	PGC962093
WALLABY_J130152-133135	195.46904	−13.52646	14156	0.418	12.32	0.01	115	19	2.5	PGC936684
WALLABY_J130153-191443	195.47362	−19.24552	11526	0.470	14.68	0.05	193	18	3.4	PGC857867
WALLABY_J130154-144123	195.47899	−14.68982	4921	0.437	13.22	0.01	209	32	8.4	PGC921296
WALLABY_J130156-135401	195.48538	−13.90044	2542	0.500	13.78	0.01	66	18	3.7	PGC931691
WALLABY_J130158-164401	195.49454	−16.73375	13005	0.582	15.61	0.04	63	18	3.4	–
WALLABY_J130200-155427	195.50008	−15.90763	5303	0.466	11.21	0.01	147	19	2.2	–
WALLABY_J130201-164147	195.50471	−16.69652	13873	0.220	15.02	0.03	77	16	5.9	PGC894847
WALLABY_J130201-164641	195.50551	−16.77820	14041	0.661	11.95	0.01	423	18	3.3	PGC893661
WALLABY_J130202-115118	195.51054	−11.85506	15476	0.200	12.21	0.01	489	19	3.0	PGC117475
WALLABY_J130203-145302	195.51494	−14.88408	1349	0.546	10.76	0.01	180	15	7.8	PGC044952
WALLABY_J130213-145817	195.55522	−14.97150	4864	0.810	9.61	0.01	267	17	4.8	NGC4924
WALLABY_J130213-144945	195.55670	−14.82930	13887	0.602	13.41	0.01	363	27	1.7	PGC919393
WALLABY_J130213-171416	195.55783	−17.23782	726	0.440	12.06	0.02	39	16	6.9	PGC044982
WALLABY_J130215-170254	195.56647	−17.04860	5926	0.311	15.81	0.17	140	32	2.5	PGC889586
WALLABY_J130220-143758	195.58398	−14.63290	4907	0.000	14.78	0.02	59	17	5.4	–
WALLABY_J130223-174422	195.59752	−17.73943	3018	0.443	–	–	103	19	2.5	–
WALLABY_J130223-122031	195.59900	−12.34199	5137	0.785	10.78	0.01	332	18	4.3	PGC044987
WALLABY_J130223-160911	195.59924	−16.15332	13858	0.268	11.80	0.01	385	19	2.2	PGC901788
WALLABY_J130224-155038	195.60175	−15.84401	13652	0.341	16.01	0.07	142	18	4.2	PGC905728
WALLABY_J130225-174046	195.60822	−17.67948	4649	0.200	9.66	0.01	475	16	6.1	PGC045006
WALLABY_J130235-113803	195.64989	−11.63425	3482	0.414	12.37	0.01	214	19	2.4	PGC963477
WALLABY_J130241-192818	195.67419	−19.47192	11658	0.797	11.69	0.01	277	17	4.8	PGC3082123
WALLABY_J130244-125326	195.68695	−12.89067	14081	0.345	12.22	0.01	404	17	4.7	PGC117487
WALLABY_J130246-115536	195.69200	−11.92683	7190	0.680	16.52	0.08	86	19	2.8	–
WALLABY_J130246-151426	195.69237	−15.24073	15715	0.420	14.96	0.01	178	34	3.1	–
WALLABY_J130252-113001	195.71696	−11.50039	11241	0.740	12.86	0.01	269	17	4.8	PGC965020
WALLABY_J130254-135530	195.72784	−13.92522	21634	0.673	13.61	0.01	159	38	1.2	–
WALLABY_J130254-155621	195.72888	−15.93930	5429	0.500	14.43	0.02	130	17	5.6	PGC904504
WALLABY_J130302-201332	195.76128	−20.22578	6872	0.596	13.62	0.01	174	19	3.1	–
WALLABY_J130306-193614	195.77562	−19.60398	12662	0.733	13.35	0.01	204	19	2.7	ESO575-051
WALLABY_J130309-193935	195.79062	−19.65972	15769	0.454	12.80	0.01	385	17	4.9	PGC852231
WALLABY_J130311-172230	195.79817	−17.37508	2963	0.000	13.03	0.02	41	15	7.1	PGC045073
WALLABY_J130311-134534	195.79984	−13.75961	11755	0.823	15.90	0.09	123	18	3.6	PGC933661
WALLABY_J130315-193958	195.81541	−19.66637	14233	0.470	14.46	0.04	238	17	4.9	PGC852124
WALLABY_J130315-140627	195.81648	−14.10755	7221	0.521	12.82	0.01	247	17	4.8	PGC928898
WALLABY_J130316-115951	195.81897	−11.99759	7194	0.000	16.87	0.12	97	17	4.8	–
WALLABY_J130320-193543	195.83368	−19.59542	11672	0.588	14.30	0.01	165	19	3.2	PGC853086
WALLABY_J130320-112144	195.83578	−11.36224	21222	0.000	12.97	0.01	267	18	3.3	PGC966673
WALLABY_J130321-134144	195.84065	−13.69555	13922	0.000	10.84	0.01	216	19	2.3	PGC083771
WALLABY_J130322-130612	195.84279	−13.10336	14352	0.000	13.36	0.01	168	19	2.6	PGC942877
WALLABY_J130323-172339	195.84752	−17.39424	3060	0.639	14.57	0.03	121	17	4.9	–
WALLABY_J130324-144601	195.85001	−14.76711	2582	0.830	13.29	0.02	110	17	5.6	PGC045101
WALLABY_J130325-153818	195.85802	−15.63852	4520	0.200	14.77	0.17	136	17	4.8	PGC908455
WALLABY_J130326-163847	195.85870	−16.64641	14036	0.304	14.44	0.01	114	18	4.1	PGC895507
WALLABY_J130327-202922	195.86401	−20.48955	4293	0.718	15.12	0.05	112	19	2.3	PGC841049

Table 3 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J130327-202706	195.86446	−20.45181	13627	0.678	13.91	0.02	229	18	4.0	PGC841569
WALLABY_J130328-114125	195.86679	−11.69049	2716	0.329	12.08	0.01	200	19	2.7	PGC962909
WALLABY_J130328-120420	195.86732	−12.07248	5328	0.265	14.53	0.03	168	16	6.4	PGC126009
WALLABY_J130328-115201	195.86743	−11.86700	14615	0.354	15.12	0.02	229	19	2.4	PGC126008
WALLABY_J130334-163733	195.89178	−16.62594	13919	0.671	13.31	0.01	259	17	4.8	–
WALLABY_J130337-142537	195.90723	−14.42708	2661	0.492	12.02	0.01	181	17	5.2	PGC924727
WALLABY_J130337-155652	195.90732	−15.94794	13753	0.529	17.17	0.11	47	17	4.7	–
WALLABY_J130340-211340	195.91754	−21.22792	6927	0.556	15.83	0.05	148	18	4.3	–
WALLABY_J130340-113541	195.91873	−11.59480	5617	0.000	12.61	0.02	127	19	2.9	PGC963933
WALLABY_J130342-123045	195.92900	−12.51271	15128	0.376	15.54	0.04	246	34	3.6	PGC104954
WALLABY_J130343-165607	195.92953	−16.93533	10289	0.820	14.78	0.04	104	18	3.6	–
WALLABY_J130343-162557	195.93301	−16.43269	12611	0.830	14.39	0.02	57	16	5.9	–
WALLABY_J130346-113711	195.94312	−11.61989	5575	0.230	12.48	0.01	237	19	2.6	PGC126010
WALLABY_J130347-180311	195.94650	−18.05323	17709	0.000	18.32	0.28	94	25	1.8	–
WALLABY_J130348-162236	195.95010	−16.37685	17090	0.748	13.06	0.01	111	18	3.6	PGC898932
WALLABY_J130350-163312	195.95982	−16.55342	12773	0.309	10.77	0.01	614	18	4.0	PGC045134
WALLABY_J130353-192550	195.97438	−19.43064	13707	0.325	14.13	0.02	208	18	3.6	PGC855381
WALLABY_J130354-110256	195.97845	−11.04894	2741	0.204	13.87	0.01	45	18	3.9	PGC970580
WALLABY_J130355-163807	195.97949	−16.63535	13453	0.000	12.85	0.01	215	34	2.9	PGC895687
WALLABY_J130357-112956	195.98788	−11.49888	3187	0.410	8.43	0.01	406	17	4.7	PGC045146
WALLABY_J130358-143526	195.99475	−14.59077	14130	0.928	12.69	0.01	101	19	3.0	PGC3082132
WALLABY_J130358-164910	195.99556	−16.81949	11041	0.741	15.13	0.03	123	18	3.6	PGC893015
WALLABY_J130400-165409	196.00310	−16.90259	14079	0.000	12.42	0.01	171	17	5.2	–
WALLABY_J130401-170100	196.00488	−17.01689	13756	0.958	12.27	0.01	172	17	4.8	PGC890091
WALLABY_J130401-200110	196.00546	−20.01959	11606	0.357	13.58	0.01	188	19	3.1	PGC847332
WALLABY_J130401-112916	196.00604	−11.48803	5831	0.000	13.40	0.04	116	18	3.6	NGC4933C
WALLABY_J130405-141215	196.02107	−14.20426	14071	0.848	14.00	0.02	33	17	5.6	PGC927648
WALLABY_J130408-192102	196.03395	−19.35056	13242	0.602	12.44	0.01	304	18	3.5	PGC3082135
WALLABY_J130408-142339	196.03542	−14.39423	7225	0.240	15.04	0.02	207	18	4.1	PGC925132
WALLABY_J130410-134334	196.04176	−13.72615	3036	0.000	13.81	0.01	115	17	5.2	PGC934104
WALLABY_J130410-174551	196.04443	−17.76435	13695	0.693	14.98	0.03	156	14	8.9	–
WALLABY_J130413-113048	196.05739	−11.51358	5687	0.000	11.48	0.01	226	19	3.1	PGC045169
WALLABY_J130414-191227	196.05965	−19.20754	13998	0.224	14.73	0.03	247	17	4.6	PGC858411
WALLABY_J130415-102023	196.06256	−10.33984	3107	0.679	8.06	0.01	460	16	5.9	–
WALLABY_J130415-115926	196.06651	−11.99079	2653	0.754	17.28	0.24	72	18	3.7	–
WALLABY_J130417-165026	196.07396	−16.84055	11784	0.578	16.53	0.06	182	19	3.0	–
WALLABY_J130417-202952	196.07498	−20.49795	4745	0.795	16.23	0.06	73	18	3.6	–
WALLABY_J130420-181518	196.08566	−18.25500	2732	0.390	16.11	0.03	86	18	4.0	PGC870491
WALLABY_J130421-111510	196.08916	−11.25302	3531	0.840	18.12	0.28	94	19	2.6	–
WALLABY_J130422-170313	196.09204	−17.05386	13652	0.418	11.85	0.01	115	18	4.5	PGC2816859
WALLABY_J130422-210413	196.09380	−21.07042	3069	0.000	15.48	0.02	73	18	4.1	PGC833094
WALLABY_J130425-204308	196.10683	−20.71903	13102	0.694	12.19	0.01	159	19	2.9	–
WALLABY_J130426-202720	196.11086	−20.45556	15714	0.355	11.57	0.01	161	19	3.2	PGC170229
WALLABY_J130430-180121	196.12614	−18.02263	14009	0.723	13.24	0.01	257	18	3.3	PGC873882
WALLABY_J130430-174819	196.12688	−17.80542	10993	0.350	13.35	0.01	314	18	3.8	PGC877198
WALLABY_J130437-170033	196.15500	−17.00922	11079	0.850	14.75	0.01	137	17	5.7	PGC890231
WALLABY_J130438-113758	196.16077	−11.63297	5681	0.621	14.49	0.03	148	18	3.3	PGC963488
WALLABY_J130441-123008	196.17236	−12.50243	18720	0.584	13.88	0.02	280	18	3.4	PGC951874
WALLABY_J130444-160813	196.18341	−16.13710	18002	0.000	14.18	0.01	149	19	3.1	–
WALLABY_J130445-190601	196.18811	−19.10027	13399	0.000	15.32	0.05	182	18	3.7	PGC859735
WALLABY_J130445-183840	196.18938	−18.64448	2721	0.672	13.81	0.02	102	18	4.3	PGC865569
WALLABY_J130445-165416	196.19005	−16.90455	10818	0.236	11.92	0.01	362	18	3.3	PGC091249
WALLABY_J130446-142034	196.19388	−14.34282	21442	0.398	18.43	0.23	214	17	4.6	–
WALLABY_J130449-171802	196.20738	−17.30059	10920	0.000	10.89	0.01	161	18	3.4	PGC045216
WALLABY_J130449-113123	196.20818	−11.52310	5668	0.770	16.79	0.03	48	19	3.0	–
WALLABY_J130450-141139	196.20894	−14.19417	18202	0.360	17.26	0.10	230	19	2.4	PGC927642
WALLABY_J130456-181831	196.23633	−18.30883	13933	0.300	15.60	0.06	131	33	1.5	PGC869798
WALLABY_J130457-201215	196.24011	−20.20426	11973	0.830	15.00	0.04	53	19	2.8	PGC844932
WALLABY_J130500-111525	196.25049	−11.25705	13293	0.816	13.76	0.01	112	50	0.8	PGC968026

Table 3 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J130501-204158	196.25653	−20.69949	7053	0.267	15.65	0.03	185	19	2.3	PGC838122
WALLABY_J130501-162151	196.25688	−16.36427	12632	0.000	11.74	0.01	188	19	3.2	PGC899080
WALLABY_J130501-131601	196.25737	−13.26705	5407	0.000	16.17	0.08	83	16	6.2	–
WALLABY_J130502-201243	196.25914	−20.21213	7107	0.533	16.34	0.09	109	18	3.5	PGC169668
WALLABY_J130503-171522	196.26440	−17.25612	725	0.452	15.03	0.02	41	16	6.8	PGC886203
WALLABY_J130510-161645	196.29510	−16.27932	13651	0.000	15.29	0.03	128	19	3.2	PGC900178
WALLABY_J130514-203447	196.30980	−20.57978	13495	0.000	–	–	112	19	2.9	–
WALLABY_J130515-165316	196.31442	−16.88796	2841	0.436	12.27	0.01	187	16	6.3	PGC045257
WALLABY_J130516-172641	196.31732	−17.44484	10737	0.327	11.17	0.01	625	18	3.7	PGC045262
WALLABY_J130516-171618	196.32076	−17.27185	13688	0.883	15.45	0.04	153	18	4.4	–
WALLABY_J130517-172223	196.32454	−17.37306	10923	0.000	13.08	0.01	74	26	1.7	PGC884399
WALLABY_J130520-112019	196.33481	−11.33883	3922	0.613	13.51	0.02	115	18	3.5	PGC966986
WALLABY_J130525-161217	196.35509	−16.20487	12264	0.597	12.68	0.01	168	19	2.6	PGC901125
WALLABY_J130527-142801	196.36613	−14.46698	2538	0.800	18.60	0.31	78	19	2.2	–
WALLABY_J130528-154240	196.36722	−15.71110	5929	0.906	16.61	0.08	82	19	3.1	–
WALLABY_J130528-111610	196.36914	−11.26951	13652	0.658	11.75	0.01	284	17	4.6	PGC045276
WALLABY_J130528-111138	196.37041	−11.19409	3249	0.590	16.29	0.14	54	16	6.7	–
WALLABY_J130532-200236	196.38461	−20.04343	13700	0.800	13.07	0.02	176	16	5.8	PGC847068
WALLABY_J130532-124549	196.38631	−12.76380	2622	0.710	17.65	0.16	47	18	3.3	–
WALLABY_J130534-154506	196.39272	−15.75172	2909	0.800	12.65	0.01	98	14	8.6	PGC045300
WALLABY_J130539-144459	196.41261	−14.74998	14259	0.000	14.08	0.01	136	17	5.7	PGC920430
WALLABY_J130545-130604	196.43791	−13.10124	14908	0.494	12.34	0.01	253	18	3.3	PGC158453
WALLABY_J130545-193817	196.44034	−19.63815	13465	0.711	12.48	0.01	344	18	3.3	PGC852502
WALLABY_J130546-133400	196.44485	−13.56669	1293	0.490	17.79	0.27	57	18	3.6	–
WALLABY_J130547-130037	196.44597	−13.01033	18408	0.841	15.10	0.03	96	18	4.0	–
WALLABY_J130548-210454	196.45178	−21.08173	8521	0.790	15.60	0.05	146	18	3.9	PGC832913
WALLABY_J130548-200037	196.45261	−20.01054	14326	0.877	12.71	0.01	237	19	2.9	PGC3094241
WALLABY_J130554-165937	196.47572	−16.99376	2616	0.344	15.06	0.04	83	18	4.4	PGC890472
WALLABY_J130554-121523	196.47575	−12.25651	11303	0.400	14.59	0.03	215	17	4.6	PGC104969
WALLABY_J130559-145906	196.49699	−14.98512	5619	0.000	14.22	0.01	81	19	2.8	PGC917327
WALLABY_J130559-133807	196.49884	−13.63545	11565	0.435	13.54	0.02	282	25	1.8	PGC935257
WALLABY_J130602-155021	196.50987	−15.83932	6730	0.667	14.79	0.01	162	19	3.1	PGC905813
WALLABY_J130606-172523	196.52640	−17.42311	13985	0.000	–	–	205	18	3.8	–
WALLABY_J130607-201432	196.53043	−20.24240	12265	0.297	13.98	0.02	190	19	2.7	PGC844462
WALLABY_J130607-124509	196.53215	−12.75256	11370	0.000	15.89	0.08	33	17	4.5	–
WALLABY_J130608-172615	196.53592	−17.43755	13665	0.645	11.67	0.01	88	19	2.6	PGC158461
WALLABY_J130612-201622	196.55139	−20.27283	15172	0.000	12.17	0.01	103	17	4.5	–
WALLABY_J130614-202212	196.56081	−20.37024	15216	0.000	12.79	0.01	256	17	5.2	PGC158478
WALLABY_J130615-135536	196.56471	−13.92691	11586	0.385	13.27	0.01	307	18	4.5	PGC931345
WALLABY_J130618-193547	196.57515	−19.59638	4257	0.200	15.05	0.03	180	17	5.5	–
WALLABY_J130618-113220	196.57658	−11.53898	5904	0.510	15.05	0.03	169	18	3.6	PGC964563
WALLABY_J130618-173039	196.57684	−17.51096	1470	0.982	13.22	0.03	80	15	8.0	PGC045359
WALLABY_J130622-161408	196.59288	−16.23570	11150	0.000	14.09	0.02	115	19	3.1	PGC900739
WALLABY_J130623-145631	196.59656	−14.94209	6003	0.000	13.57	0.02	46	17	4.9	PGC917895
WALLABY_J130624-160656	196.60194	−16.11564	5661	0.483	14.82	0.03	180	26	1.7	PGC902274
WALLABY_J130626-140731	196.61206	−14.12550	2597	0.946	12.61	0.01	90	18	4.4	–
WALLABY_J130627-153029	196.61597	−15.50805	7219	0.398	15.41	0.04	168	33	1.5	PGC910311
WALLABY_J130629-133413	196.62184	−13.57053	2467	0.662	11.91	0.01	165	16	6.5	IC4177
WALLABY_J130630-112046	196.62907	−11.34622	15569	0.368	14.90	0.01	173	34	1.4	PGC966900
WALLABY_J130633-190609	196.64066	−19.10274	16087	0.000	11.99	0.01	217	21	1.9	PGC3094114
WALLABY_J130633-160714	196.64148	−16.12059	5716	0.525	13.29	0.02	176	19	2.8	PGC902217
WALLABY_J130636-211139	196.65219	−21.19433	13429	0.654	13.24	0.02	44	17	4.5	PGC831456
WALLABY_J130639-135036	196.66463	−13.84333	6418	0.240	15.60	0.15	186	19	2.8	PGC932523
WALLABY_J130639-115418	196.66580	−11.90501	7130	0.595	15.31	0.03	135	32	4.7	PGC126011
WALLABY_J130643-155855	196.68051	−15.98207	11347	0.497	16.17	0.07	159	18	3.6	–
WALLABY_J130644-161702	196.68571	−16.28415	2498	0.677	16.55	0.09	40	16	6.1	PGC900116

Table 3. *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J130645-162250	196.68823	−16.38061	11000	0.934	17.94	0.23	284	19	2.1	PGC158515
WALLABY_J130645-122324	196.69051	−12.39024	3315	0.683	15.76	0.06	71	19	2.9	PGC104973
WALLABY_J130645-164412	196.69138	−16.73689	18736	0.463	12.85	0.01	329	19	2.4	PGC894272
WALLABY_J130647-162241	196.69757	−16.37808	10931	0.803	12.99	0.01	143	18	3.5	PGC158515
WALLABY_J130648-202247	196.70230	−20.37974	2911	0.480	14.76	0.02	123	18	4.1	–
WALLABY_J130654-154854	196.72530	−15.81525	11342	0.505	14.15	0.02	197	33	2.5	PGC906153
WALLABY_J130656-184823	196.73413	−18.80663	2812	0.522	12.64	0.01	180	19	2.6	PGC183516
WALLABY_J130659-151041	196.74738	−15.17824	4845	0.530	14.77	0.03	62	18	4.4	PGC914689
WALLABY_J130659-211444	196.74916	−21.24559	15759	0.970	15.11	0.04	152	19	3.1	–
WALLABY_J130703-185253	196.76248	−18.88159	13852	0.330	14.19	0.01	273	19	2.5	–
WALLABY_J130706-171551	196.77788	−17.26418	8701	0.390	14.05	0.01	199	18	4.2	PGC886105
WALLABY_J130718-130903	196.82791	−13.15083	1527	0.500	16.05	0.09	50	19	2.3	PGC183529
WALLABY_J130718-162004	196.82855	−16.33470	2461	0.640	13.47	0.01	135	17	4.8	PGC899455
WALLABY_J130719-161334	196.83118	−16.22611	13571	0.829	12.74	0.01	349	34	2.5	PGC183534
WALLABY_J130730-164622	196.87904	−16.77303	13774	0.500	16.91	0.09	147	41	1.2	–
WALLABY_J130732-132154	196.88606	−13.36509	4900	0.374	15.74	0.03	109	19	3.1	PGC938953
WALLABY_J130733-140834	196.88905	−14.14288	18596	0.906	14.87	0.03	148	17	4.6	–
WALLABY_J130733-120657	196.89087	−12.11602	6479	0.204	14.44	0.02	188	17	4.8	–
WALLABY_J130734-145145	196.89204	−14.86252	18134	0.467	12.20	0.01	378	18	3.6	PGC918973
WALLABY_J130735-200029	196.89732	−20.00807	6273	0.619	13.82	0.02	192	17	5.6	ESO575-058
WALLABY_J130737-151812	196.90663	−15.30342	11834	0.510	13.64	0.04	244	19	2.2	PGC913022
WALLABY_J130738-183754	196.91014	−18.63188	17492	0.458	12.36	0.01	427	19	2.4	PGC183553
WALLABY_J130739-153555	196.91330	−15.59867	12031	0.335	16.59	0.08	154	33	2.4	–
WALLABY_J130747-213240	196.94809	−21.54450	7510	0.497	19.12	0.47	62	19	3.0	–
WALLABY_J130749-161828	196.95605	−16.30797	4936	0.480	14.58	0.02	151	18	4.2	PGC899810
WALLABY_J130752-194822	196.96712	−19.80627	13940	0.320	14.10	0.02	273	19	3.0	PGC850234
WALLABY_J130753-205916	196.97264	−20.98794	12472	0.614	12.03	0.01	318	18	4.3	ESO575-060
WALLABY_J130756-164123	196.98540	−16.68983	951	0.681	11.80	0.01	49	16	5.8	PGC045512
WALLABY_J130757-193648	196.98988	−19.61359	13884	0.489	12.98	0.02	297	33	1.5	PGC852845
WALLABY_J130758-121123	196.99458	−12.18972	12546	0.765	12.32	0.01	347	18	4.4	PGC956421
WALLABY_J130759-180456	196.99896	−18.08223	10765	0.792	12.25	0.01	228	18	4.1	PGC873038
WALLABY_J130801-203117	197.00435	−20.52141	4544	0.542	14.86	0.04	137	16	6.8	PGC045515
WALLABY_J130806-144640	197.02521	−14.77792	2597	0.870	13.29	0.01	101	16	5.8	PGC045518
WALLABY_J130806-174547	197.02542	−17.76329	1863	0.527	12.63	0.01	66	18	4.3	PGC877919
WALLABY_J130808-120042	197.03716	−12.01183	11282	0.798	12.34	0.01	252	16	6.2	PGC117794
WALLABY_J130812-145720	197.05084	−14.95556	11571	0.796	15.25	0.04	157	33	2.3	PGC917749
WALLABY_J130813-161425	197.05727	−16.24027	2829	0.200	13.54	0.01	137	18	3.9	PGC091258
WALLABY_J130813-120248	197.05826	−12.04678	6351	0.370	16.04	0.02	149	18	3.6	PGC958386
WALLABY_J130815-210002	197.06342	−21.00073	1649	0.200	12.73	0.01	168	17	5.7	ESO575-061
WALLABY_J130818-143213	197.07553	−14.53710	2675	0.640	12.25	0.02	174	17	5.3	PGC045532
WALLABY_J130821-185647	197.09009	−18.94648	13673	0.000	–	–	256	34	1.9	PGC861768
WALLABY_J130825-194130	197.10654	−19.69179	6954	0.939	12.30	0.01	166	16	6.3	PGC851830
WALLABY_J130828-150130	197.11859	−15.02499	11577	0.790	14.07	0.01	202	18	3.7	PGC916746
WALLABY_J130829-204924	197.12314	−20.82341	1449	0.457	14.10	0.02	76	17	5.4	PGC169678
WALLABY_J130832-144904	197.13641	−14.81802	5805	0.561	14.28	0.03	151	17	4.7	–
WALLABY_J130835-143159	197.14816	−14.53304	23955	0.000	19.13	0.59	118	19	2.2	–
WALLABY_J130837-155227	197.15729	−15.87431	12404	0.594	15.94	0.06	50	18	3.7	–
WALLABY_J130838-164909	197.15872	−16.81919	5092	0.618	16.02	0.03	148	19	3.2	PGC893092
WALLABY_J130838-192128	197.15912	−19.35781	4717	0.707	14.84	0.02	86	18	4.3	PGC856358
WALLABY_J130841-155908	197.17395	−15.98562	5854	0.500	17.34	0.11	55	19	2.1	–
WALLABY_J130846-175751	197.19212	−17.96420	13642	0.510	12.28	0.01	308	17	5.7	ESO575-062
WALLABY_J130850-141531	197.20952	−14.25880	13821	0.569	13.56	0.01	296	18	3.5	PGC926926
WALLABY_J130850-125228	197.21149	−12.87462	5121	0.300	17.25	0.18	75	16	6.3	–
WALLABY_J130854-171416	197.22545	−17.23803	9802	0.341	14.55	0.05	188	19	3.0	PGC886506
WALLABY_J130854-163609	197.22835	−16.60264	2587	0.332	12.69	0.01	227	16	6.2	PGC896031
WALLABY_J130857-153100	197.24112	−15.51682	1252	0.714	7.44	0.01	297	18	4.3	SN2011IY
WALLABY_J130901-172115	197.25726	−17.35430	5003	0.692	18.43	0.29	56	19	2.3	PGC183567
WALLABY_J130906-172108	197.27515	−17.35234	4791	0.000	15.17	0.04	78	37	1.3	PGC183567

Table 3 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J130906-170551	197.27769	−17.09760	4871	0.450	16.89	0.10	58	18	3.6	–
WALLABY_J130912-121116	197.30388	−12.18779	6495	0.291	13.07	0.01	239	18	3.8	PGC117814
WALLABY_J130914-183640	197.31129	−18.61124	17455	0.660	16.89	0.10	102	19	2.7	–
WALLABY_J130919-195729	197.33003	−19.95804	17359	0.681	11.63	0.01	500	19	3.2	PGC848192
WALLABY_J130922-201247	197.34192	−20.21330	16806	0.699	13.15	0.01	285	18	3.8	PGC844831
WALLABY_J130922-133559	197.34250	−13.59985	14110	0.365	10.91	0.01	536	18	3.9	PGC183576
WALLABY_J130922-195223	197.34435	−19.87331	7168	0.460	14.05	0.01	196	17	4.8	ESO575-064
WALLABY_J130924-183226	197.35196	−18.54074	13267	0.780	12.52	0.01	179	18	3.8	PGC866889
WALLABY_J130925-155810	197.35562	−15.96960	5873	0.763	14.72	0.05	94	19	2.7	PGC904087
WALLABY_J130932-145705	197.38341	−14.95156	13932	0.000	15.51	0.07	38	19	2.8	PGC917803
WALLABY_J130934-145427	197.39267	−14.90768	5828	0.400	17.78	0.20	70	18	4.3	–
WALLABY_J130934-165107	197.39485	−16.85196	10886	0.274	13.35	0.02	272	18	4.0	PGC892631
WALLABY_J130935-124738	197.39951	−12.79395	21440	0.000	15.77	0.05	70	18	3.9	–
WALLABY_J130936-185815	197.40111	−18.97108	10657	0.680	10.75	0.01	418	18	3.4	ESO575-066
WALLABY_J130937-102944	197.40472	−10.49555	11064	0.575	12.84	0.01	343	19	2.6	PGC977489
WALLABY_J130937-150616	197.40610	−15.10456	13889	0.415	11.98	0.01	238	21	1.9	PGC183585
WALLABY_J130938-155416	197.40971	−15.90444	5836	0.756	13.24	0.02	193	19	3.0	PGC183586
WALLABY_J130939-135908	197.41528	−13.98558	11311	0.728	16.50	0.22	156	17	4.6	–
WALLABY_J130941-145553	197.42291	−14.93143	2490	0.780	16.13	0.08	29	18	3.6	PGC918059
WALLABY_J130941-132855	197.42409	−13.48200	14270	0.737	13.77	0.01	189	18	4.0	PGC937401
WALLABY_J130943-163617	197.43172	−16.60494	2574	0.282	9.35	0.01	347	15	7.7	PGC045650
WALLABY_J130945-124014	197.43927	−12.67068	14152	0.283	12.13	0.01	452	40	1.2	PGC105079
WALLABY_J130947-171234	197.44753	−17.20946	5048	0.308	14.58	0.03	158	18	3.3	PGC887005
WALLABY_J130947-101916	197.44817	−10.32118	1210	0.000	–	–	196	17	5.7	PGC045652
WALLABY_J130949-154149	197.45634	−15.69700	12157	0.397	14.11	0.02	242	19	2.3	PGC907662
WALLABY_J130950-212052	197.45882	−21.34776	1366	0.900	14.11	0.01	52	19	2.6	PGC829447
WALLABY_J130954-104332	197.47824	−10.72581	6043	0.688	11.85	0.01	238	19	2.3	PGC045661
WALLABY_J130958-171937	197.49469	−17.32698	2546	0.760	18.40	0.22	65	29	1.6	–
WALLABY_J130959-155357	197.49956	−15.89941	2481	0.765	15.37	0.04	68	19	2.9	–
WALLABY_J131001-162607	197.50473	−16.43535	13084	0.586	15.75	0.04	55	19	3.1	–
WALLABY_J131009-171227	197.53784	−17.20764	7610	0.956	15.26	0.03	169	19	3.1	–
WALLABY_J131009-121223	197.53787	−12.20650	3979	0.912	14.62	0.01	79	19	2.2	PGC105081
WALLABY_J131017-171323	197.57216	−17.22330	16651	0.290	12.31	0.01	407	23	1.8	PGC886730
WALLABY_J131017-193255	197.57390	−19.54860	2700	0.780	16.42	0.10	55	23	1.8	PGC853715
WALLABY_J131021-214424	197.58797	−21.74015	6988	0.502	14.78	0.04	171	19	3.1	PGC824324
WALLABY_J131024-114121	197.60329	−11.68921	12943	0.766	14.10	0.02	235	18	3.6	PGC117824
WALLABY_J131025-165550	197.60536	−16.93071	2441	0.648	10.47	0.01	212	18	3.5	PGC045711
WALLABY_J131026-153614	197.60863	−15.60407	5942	0.280	15.94	0.04	130	18	3.7	PGC908933
WALLABY_J131029-213510	197.62357	−21.58615	7053	0.204	11.89	0.01	241	18	3.6	PGC045713
WALLABY_J131030-171159	197.62814	−17.19982	10988	0.707	15.64	0.02	44	19	2.9	–
WALLABY_J131032-172527	197.63542	−17.42416	13262	0.791	11.33	0.01	308	19	2.8	PGC883458
WALLABY_J131033-173931	197.63892	−17.65874	10088	0.539	15.63	0.03	175	17	5.4	PGC879646
WALLABY_J131033-170323	197.64020	−17.05648	4898	0.349	17.11	0.14	93	17	5.7	–
WALLABY_J131035-214450	197.64601	−21.74744	2962	0.354	10.86	0.01	238	17	4.9	ESO576-003
WALLABY_J131037-144407	197.65732	−14.73553	14219	0.000	14.62	0.02	128	19	3.1	PGC920659
WALLABY_J131038-144004	197.65932	−14.66788	3357	0.990	15.53	0.06	101	18	3.5	–
WALLABY_J131038-175754	197.66057	−17.96509	13356	0.000	13.50	0.01	76	18	3.3	PGC874710
WALLABY_J131044-170801	197.68690	−17.13381	12827	0.000	13.74	0.02	115	17	5.2	PGC888323
WALLABY_J131046-161341	197.69305	−16.22817	2584	0.410	13.49	0.03	128	18	4.1	PGC900875
WALLABY_J131049-182530	197.70459	−18.42512	13410	0.984	12.49	0.01	218	16	6.2	PGC3082157
WALLABY_J131049-182903	197.70584	−18.48416	13564	0.315	14.32	0.02	150	18	3.6	PGC867554
WALLABY_J131049-105237	197.70750	−10.87702	11016	0.620	13.18	0.01	244	18	4.2	PGC972682
WALLABY_J131051-112542	197.71266	−11.42835	16844	0.606	13.86	0.02	246	19	2.9	PGC965908
WALLABY_J131051-190753	197.71312	−19.13147	19953	0.000	12.92	0.02	144	18	3.7	PGC859397
WALLABY_J131051-205740	197.71468	−20.96113	10757	0.200	12.89	0.01	549	33	2.8	ESO576-004
WALLABY_J131052-185857	197.71747	−18.98266	20101	0.891	12.38	0.01	254	35	3.2	PGC861279
WALLABY_J131054-185747	197.72621	−18.96311	16188	0.498	14.12	0.02	146	15	7.2	PGC861574
WALLABY_J131103-144149	197.76529	−14.69705	3152	0.200	15.77	0.04	100	19	2.3	–

Table 3 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J131104-185724	197.76881	−18.95685	16147	0.830	14.40	0.02	105	18	3.6	PGC861625
WALLABY_J131109-163337	197.78856	−16.56048	2952	0.496	12.41	0.01	61	19	2.9	PGC896613
WALLABY_J131113-162416	197.80464	−16.40459	16851	0.000	14.75	0.05	78	20	2.0	–
WALLABY_J131114-194440	197.81073	−19.74464	2637	0.470	16.05	0.12	84	17	5.4	–
WALLABY_J131115-202239	197.81259	−20.37770	11943	0.212	11.85	0.01	481	18	3.3	PGC091263
WALLABY_J131115-180605	197.81297	−18.10156	2753	0.350	13.51	0.02	130	19	2.5	PGC872718
WALLABY_J131117-194944	197.82416	−19.82891	2780	0.200	12.13	0.01	181	16	6.7	ESO576-005
WALLABY_J131124-104927	197.85129	−10.82440	6131	0.239	14.85	0.02	179	32	4.0	PGC973306
WALLABY_J131131-181235	197.88275	−18.20988	2533	0.770	14.78	0.05	113	18	4.2	PGC871188
WALLABY_J131132-144033	197.88420	−14.67601	2457	0.490	15.28	0.06	100	15	7.1	–
WALLABY_J131138-162351	197.90866	−16.39768	12470	0.995	10.94	0.01	105	17	5.7	PGC045805
WALLABY_J131139-165121	197.91476	−16.85596	1287	0.626	16.78	0.14	31	18	3.3	–
WALLABY_J131142-103858	197.92592	−10.64954	11033	0.275	11.35	0.01	442	33	1.4	PGC170236
WALLABY_J131143-183858	197.93230	−18.64950	2539	0.000	14.12	0.01	45	18	3.5	PGC865475
WALLABY_J131143-203210	197.93256	−20.53618	2823	0.000	11.77	0.01	95	17	4.8	PGC169683
WALLABY_J131145-191544	197.94139	−19.26221	2780	0.000	9.08	0.01	120	17	4.7	NGC5006
WALLABY_J131146-184730	197.94536	−18.79182	2574	0.298	12.50	0.01	177	17	4.8	ESO576-007
WALLABY_J131149-171308	197.95587	−17.21892	5216	0.318	14.61	0.03	157	16	6.3	PGC886844
WALLABY_J131150-141025	197.95949	−14.17368	14332	0.000	13.84	0.07	110	23	1.9	PGC928051
WALLABY_J131151-181937	197.96405	−18.32715	2968	0.620	15.58	0.03	68	17	4.9	PGC869537
WALLABY_J131152-214559	197.96956	−21.76663	6892	0.000	11.68	0.01	151	19	2.6	PGC823993
WALLABY_J131153-145917	197.97417	−14.98828	14060	0.410	15.86	0.05	227	19	2.4	–
WALLABY_J131156-145719	197.98689	−14.95541	2701	0.866	15.32	0.06	60	18	3.7	PGC917754
WALLABY_J131156-184429	197.98698	−18.74151	8891	0.230	14.81	0.03	163	18	4.5	PGC864306
WALLABY_J131157-144032	197.98894	−14.67562	2497	0.460	16.46	0.07	96	18	4.5	–
WALLABY_J131157-120351	197.99109	−12.06427	2115	0.560	11.99	0.01	128	15	7.1	PGC045824
WALLABY_J131159-134336	197.99588	−13.72685	7025	0.661	11.00	0.01	306	17	5.7	PGC170237
WALLABY_J131204-131632	198.01772	−13.27577	14715	0.418	14.08	0.01	290	17	5.5	PGC940254
WALLABY_J131205-144040	198.02351	−14.67783	6251	0.476	14.92	0.03	109	16	6.1	PGC921424
WALLABY_J131206-181550	198.02774	−18.26404	2800	0.340	16.90	0.10	64	18	3.9	–
WALLABY_J131208-203337	198.03720	−20.56033	12001	0.225	13.14	0.01	186	33	3.2	PGC840014
WALLABY_J131210-131509	198.04576	−13.25274	14477	0.883	13.73	0.01	158	18	3.6	PGC940567
WALLABY_J131211-121847	198.04959	−12.31307	3917	0.000	17.29	0.12	89	23	1.9	–
WALLABY_J131218-192640	198.07797	−19.44469	2767	0.337	11.03	0.01	227	19	2.9	ESO576-008
WALLABY_J131219-172528	198.08133	−17.42464	19900	0.000	13.05	0.01	199	18	4.0	PGC883494
WALLABY_J131220-142824	198.08348	−14.47360	6253	0.200	15.04	0.02	173	18	3.8	PGC924166
WALLABY_J131222-143329	198.09395	−14.55813	6975	0.270	14.58	0.01	165	16	6.3	PGC923068
WALLABY_J131225-185354	198.10583	−18.89853	10493	0.570	16.06	0.06	170	19	2.8	–
WALLABY_J131228-173559	198.11830	−17.59989	10258	0.330	17.94	0.16	59	19	3.0	–
WALLABY_J131234-173225	198.14522	−17.54043	2757	0.400	8.58	0.01	389	16	6.9	PGC045877
WALLABY_J131237-142630	198.15666	−14.44189	6222	0.240	12.50	0.01	285	16	6.7	PGC924550
WALLABY_J131247-132906	198.19783	−13.48503	3918	0.000	15.80	0.06	206	20	2.0	–
WALLABY_J131247-192219	198.19974	−19.37198	3055	0.355	13.89	0.03	148	17	5.3	PGC140148
WALLABY_J131248-115354	198.20013	−11.89833	1421	0.000	16.65	0.24	31	18	4.0	–
WALLABY_J131248-173738	198.20116	−17.62724	13793	0.000	12.66	0.01	306	34	12.5	–
WALLABY_J131248-191514	198.20383	−19.25406	6315	0.440	13.44	0.01	234	19	2.8	PGC857829
WALLABY_J131251-134804	198.21356	−13.80137	14169	0.000	15.25	0.01	67	17	4.6	PGC933048
WALLABY_J131251-183142	198.21355	−18.52859	6166	0.360	13.36	0.02	211	19	2.4	PGC867034
WALLABY_J131253-105339	198.22409	−10.89416	6244	0.364	13.16	0.02	245	17	5.1	PGC972450
WALLABY_J131256-181446	198.23402	−18.24625	7723	0.436	16.00	0.02	197	32	6.6	–
WALLABY_J131300-190627	198.25082	−19.10776	10509	0.487	11.97	0.01	340	17	5.6	PGC859684
WALLABY_J131301-195851	198.25505	−19.98094	19855	0.000	12.98	0.01	160	19	2.0	PGC847769
WALLABY_J131301-143720	198.25597	−14.62248	12139	0.923	14.55	0.03	70	19	2.3	PGC922257
WALLABY_J131301-193617	198.25713	−19.60497	7824	0.690	15.23	0.04	170	18	3.6	–
WALLABY_J131301-123644	198.25737	−12.61238	15250	0.980	12.02	0.01	225	19	3.2	PGC117741
WALLABY_J131302-190848	198.26187	−19.14684	10501	0.268	11.95	0.01	357	19	2.3	PGC859197
WALLABY_J131305-195830	198.27132	−19.97510	2759	0.412	9.91	0.01	306	16	5.8	ESO576-011
WALLABY_J131307-164101	198.28026	−16.68374	2683	0.230	14.22	0.04	104	21	1.9	PGC083792

Table 3 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J131312-182434	198.30171	−18.40952	19944	0.652	14.57	0.02	254	19	2.5	PGC868502
WALLABY_J131318-110526	198.32584	−11.09068	10392	0.866	14.54	0.03	71	19	2.4	PGC970085
WALLABY_J131321-185558	198.33936	−18.93289	6149	0.662	12.30	0.01	237	17	5.6	ESO576-012
WALLABY_J131324-124234	198.35281	−12.70947	15291	0.400	12.96	0.01	354	17	5.0	PGC105020
WALLABY_J131324-183125	198.35371	−18.52378	16746	0.422	16.15	0.06	74	19	2.2	–
WALLABY_J131326-143106	198.36212	−14.51858	6281	0.379	14.62	0.02	204	18	3.9	PGC045956
WALLABY_J131327-204640	198.36435	−20.77803	13465	0.509	12.86	0.01	293	19	2.8	PGC837061
WALLABY_J131330-170723	198.37544	−17.12311	2657	0.424	14.78	0.01	42	16	6.4	PGC888491
WALLABY_J131330-193244	198.37573	−19.54572	3005	0.459	9.33	0.01	398	17	5.5	NGC5022
WALLABY_J131331-160600	198.38304	−16.10012	2720	0.570	18.58	0.40	59	19	3.0	–
WALLABY_J131332-170440	198.38409	−17.07790	2927	0.808	9.79	0.01	296	18	3.8	PGC045955
WALLABY_J131333-104535	198.38937	−10.75972	14123	0.716	11.54	0.01	171	18	4.3	PGC974061
WALLABY_J131334-152553	198.39302	−15.43162	2501	0.000	10.00	0.01	73	16	6.8	PGC045958
WALLABY_J131335-201725	198.39799	−20.29040	1717	0.536	13.89	0.02	80	19	2.3	PGC843782
WALLABY_J131335-155702	198.39813	−15.95074	2489	0.290	15.05	0.13	96	19	2.3	PGC904371
WALLABY_J131336-122813	198.40144	−12.47032	3912	0.518	14.76	0.03	84	17	5.4	PGC045964
WALLABY_J131337-155035	198.40662	−15.84312	3559	0.573	14.82	0.04	104	17	4.9	PGC905726
WALLABY_J131342-181322	198.42914	−18.22296	6989	0.430	16.29	0.06	80	17	5.0	–
WALLABY_J131344-175928	198.43512	−17.99122	7111	0.000	13.72	0.01	67	18	3.5	PGC874370
WALLABY_J131346-144345	198.44577	−14.72920	2407	0.000	16.20	0.61	117	19	2.3	–
WALLABY_J131350-173043	198.45946	−17.51197	2209	0.316	13.84	0.02	150	17	5.2	PGC881995
WALLABY_J131350-160525	198.46002	−16.09052	2527	0.337	14.60	0.05	86	19	3.1	PGC083804
WALLABY_J131352-204405	198.46700	−20.73478	2898	0.000	17.87	0.21	96	18	4.1	–
WALLABY_J131352-191608	198.46928	−19.26902	7189	0.749	12.61	0.01	187	18	3.3	PGC857537
WALLABY_J131352-144156	198.47067	−14.69898	12094	0.380	12.46	0.01	302	18	3.7	PGC921162
WALLABY_J131353-192500	198.47488	−19.41672	2736	0.821	15.07	0.02	54	15	7.1	PGC140150
WALLABY_J131355-115301	198.48289	−11.88379	15132	0.000	18.12	0.19	86	19	2.8	–
WALLABY_J131359-183536	198.49956	−18.59349	6309	0.679	14.59	0.03	92	16	6.8	–
WALLABY_J131400-164707	198.50226	−16.78532	3078	0.620	13.77	0.02	160	16	6.7	PGC083818
WALLABY_J131403-120644	198.51636	−12.11227	6599	0.830	14.93	0.03	71	17	4.6	–
WALLABY_J131405-155538	198.52243	−15.92739	13791	0.793	14.88	0.03	136	17	4.6	PGC083811
WALLABY_J131408-141038	198.53427	−14.17727	6957	0.730	12.24	0.01	218	19	2.6	PGC928028
WALLABY_J131409-171242	198.53819	−17.21184	22827	0.000	17.87	0.17	108	17	4.6	–
WALLABY_J131410-213942	198.54173	−21.66184	2995	0.000	13.92	0.02	53	18	3.5	PGC046019
WALLABY_J131410-132513	198.54283	−13.42054	14682	0.925	14.02	0.01	201	34	2.2	PGC938217
WALLABY_J131413-125346	198.55466	−12.89634	13922	0.000	13.93	0.01	63	18	4.0	PGC105025
WALLABY_J131415-141108	198.56488	−14.18571	6342	0.490	13.12	0.01	247	18	4.1	PGC927924
WALLABY_J131417-120754	198.57254	−12.13176	2894	0.220	15.04	0.04	125	17	5.3	–
WALLABY_J131420-115314	198.58415	−11.88738	14501	0.630	14.12	0.01	99	19	2.4	PGC105028
WALLABY_J131420-122736	198.58699	−12.46009	19288	0.567	12.44	0.01	371	18	4.4	PGC117754
WALLABY_J131425-161751	198.60635	−16.29757	17061	0.000	14.82	0.01	103	18	3.9	PGC083824
WALLABY_J131425-150115	198.60652	−15.02101	5383	0.000	15.06	0.02	118	34	1.4	–
WALLABY_J131426-203916	198.61145	−20.65465	4663	0.880	14.42	0.02	63	17	5.3	PGC838711
WALLABY_J131430-173154	198.62662	−17.53181	2487	0.347	11.39	0.01	205	18	4.4	PGC046049
WALLABY_J131430-102917	198.62849	−10.48814	16589	0.461	15.01	0.02	192	19	3.0	PGC977582
WALLABY_J131431-162247	198.63020	−16.37980	1477	0.617	13.73	0.02	107	16	6.9	PGC083827
WALLABY_J131431-105651	198.63242	−10.94775	2016	0.530	14.45	0.04	81	17	5.4	PGC971826
WALLABY_J131434-145005	198.64577	−14.83484	5375	0.723	16.38	0.02	212	19	2.6	–
WALLABY_J131435-195619	198.64594	−19.93883	20705	0.000	14.84	0.06	81	26	1.7	–
WALLABY_J131435-181723	198.64737	−18.28981	1513	0.880	15.23	0.05	62	18	3.5	–
WALLABY_J131439-155030	198.66324	−15.84187	2354	0.000	13.25	0.01	72	18	4.2	PGC083831
WALLABY_J131441-184647	198.67374	−18.77975	6903	0.000	11.27	0.01	211	18	4.2	PGC046062
WALLABY_J131441-112033	198.67491	−11.34267	6933	0.304	11.84	0.01	370	19	3.1	PGC966953
WALLABY_J131444-172117	198.68556	−17.35489	11854	0.673	13.00	0.01	209	18	4.3	PGC884641
WALLABY_J131447-112436	198.69907	−11.41006	2218	0.340	15.98	0.04	54	18	4.0	–
WALLABY_J131448-163249	198.70222	−16.54712	21898	0.000	15.32	0.01	121	19	2.1	–
WALLABY_J131449-134343	198.70526	−13.72875	6505	0.770	12.63	0.01	172	17	4.8	–
WALLABY_J131451-143740	198.71600	−14.62794	11884	0.620	12.36	0.01	289	18	3.3	–

Table 3. *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J131459-120748	198.74664	−12.13015	16863	0.534	14.04	0.01	313	22	1.9	PGC105036
WALLABY_J131459-171601	198.74867	−17.26720	2390	0.680	12.74	0.01	143	19	3.1	–
WALLABY_J131502-183430	198.75937	−18.57514	4795	0.900	15.56	0.02	78	19	2.2	PGC866465
WALLABY_J131503-192914	198.76543	−19.48733	8016	0.700	13.73	0.02	142	19	2.4	PGC169692
WALLABY_J131509-210140	198.79112	−21.02802	13039	0.374	13.13	0.01	324	18	3.6	PGC833678
WALLABY_J131512-175802	198.80380	−17.96732	2775	0.000	11.58	0.01	47	15	7.9	ESO576-017
WALLABY_J131516-145919	198.81786	−14.98865	2332	0.686	15.08	0.01	45	27	1.7	PGC917272
WALLABY_J131524-154106	198.85368	−15.68517	2863	0.540	16.56	0.40	36	19	2.3	–
WALLABY_J131526-132732	198.85919	−13.45894	14662	0.416	13.93	0.02	235	18	3.3	PGC937743
WALLABY_J131528-151151	198.86954	−15.19754	2320	0.541	16.59	0.08	52	18	3.8	–
WALLABY_J131528-131929	198.87068	−13.32490	13590	0.000	11.91	0.01	191	34	4.6	PGC183622
WALLABY_J131532-161726	198.88437	−16.29064	3241	0.959	16.98	0.11	80	18	3.5	PGC083869
WALLABY_J131533-170024	198.88905	−17.00669	2451	0.433	15.43	0.07	109	22	1.9	PGC890281
WALLABY_J131535-142104	198.89740	−14.35114	6968	0.200	15.29	0.04	161	17	5.0	PGC925700
WALLABY_J131543-124057	198.93204	−12.68255	23088	0.000	13.77	0.09	168	19	2.3	PGC949188
WALLABY_J131547-155957	198.94633	−15.99932	11585	0.314	16.17	0.08	222	19	3.2	–
WALLABY_J131547-173827	198.94937	−17.64091	13514	0.777	18.18	0.23	133	19	2.3	PGC880042
WALLABY_J131548-170147	198.95201	−17.02973	14044	0.986	13.51	0.01	115	18	4.0	PGC889926
WALLABY_J131548-150626	198.95222	−15.10738	12388	0.870	16.10	0.05	200	18	4.2	–
WALLABY_J131551-161220	198.96263	−16.20575	9064	0.509	12.46	0.01	258	14	8.8	PGC901139
WALLABY_J131551-131140	198.96280	−13.19454	13335	0.340	16.55	0.07	156	34	2.2	–
WALLABY_J131554-145828	198.97626	−14.97468	14737	0.720	16.75	0.04	131	19	2.3	–
WALLABY_J131557-145150	198.98900	−14.86406	12230	0.437	16.15	0.03	72	17	4.5	–
WALLABY_J131600-185222	199.00174	−18.87293	17626	0.000	16.84	0.09	112	17	4.8	–
WALLABY_J131601-174034	199.00682	−17.67625	10444	0.527	13.79	0.01	297	16	6.5	PGC879345
WALLABY_J131608-165949	199.03412	−16.99698	5360	0.860	15.33	0.02	115	19	3.1	PGC083884
WALLABY_J131611-191738	199.04622	−19.29414	20150	0.803	13.96	0.02	224	19	2.2	PGC857252
WALLABY_J131611-174521	199.04782	−17.75587	13768	0.250	13.81	0.07	101	18	3.4	PGC878051
WALLABY_J131613-114335	199.05829	−11.72663	14172	0.825	12.89	0.01	191	16	6.6	PGC962501
WALLABY_J131616-122639	199.06943	−12.44438	6885	0.000	15.40	0.12	58	18	4.2	–
WALLABY_J131618-204147	199.07672	−20.69661	2893	0.723	13.45	0.01	115	16	5.8	–
WALLABY_J131618-190711	199.07692	−19.11988	6382	0.654	16.74	0.15	111	19	2.5	–
WALLABY_J131619-214517	199.08017	−21.75478	2956	0.260	14.20	0.02	99	17	5.3	–
WALLABY_J131620-164013	199.08357	−16.67041	5437	0.526	10.66	0.01	339	19	2.8	PGC046193
WALLABY_J131623-133604	199.09779	−13.60111	6647	0.460	16.57	0.11	110	19	2.5	–
WALLABY_J131624-192614	199.10020	−19.43734	7511	0.659	13.47	0.01	169	17	4.6	PGC855248
WALLABY_J131626-173326	199.11020	−17.55721	2170	0.000	15.43	0.05	89	19	3.1	–
WALLABY_J131631-134126	199.13008	−13.69065	13981	0.648	16.91	0.04	63	17	4.7	–
WALLABY_J131638-174225	199.16194	−17.70718	13658	0.566	13.51	0.01	160	19	2.3	–
WALLABY_J131641-192652	199.17360	−19.44779	8039	0.278	11.11	0.01	371	17	5.5	ESO576-019
WALLABY_J131643-142608	199.18309	−14.43563	10878	0.506	14.06	0.02	210	33	1.5	PGC924641
WALLABY_J131644-153150	199.18646	−15.53078	2977	0.510	17.86	0.35	82	19	2.3	–
WALLABY_J131648-142008	199.20361	−14.33554	10777	0.447	12.07	0.01	122	38	1.3	PGC158622
WALLABY_J131649-133623	199.20540	−13.60653	6716	0.813	11.25	0.01	169	17	5.7	PGC046236
WALLABY_J131650-214015	199.20877	−21.67106	1926	0.618	12.70	0.01	118	19	2.7	ESO576-020
WALLABY_J131650-184634	199.21046	−18.77630	7800	0.399	15.76	0.03	154	18	3.5	PGC863832
WALLABY_J131652-175359	199.22041	−17.89995	2810	0.814	13.40	0.01	40	17	5.0	ESO576-021
WALLABY_J131655-134334	199.22971	−13.72611	6650	0.752	12.89	0.01	97	18	4.5	PGC934121
WALLABY_J131655-163531	199.23250	−16.59194	2104	0.200	12.33	0.01	141	19	2.1	PGC046256
WALLABY_J131657-170718	199.24133	−17.12181	6270	0.000	16.04	0.07	139	32	5.1	–
WALLABY_J131658-163757	199.24478	−16.63275	1742	0.717	7.30	0.01	329	15	7.8	NGC5054
WALLABY_J131702-104612	199.25885	−10.77026	2838	0.560	10.61	0.01	263	18	4.4	IC4216
WALLABY_J131706-161516	199.27588	−16.25452	2636	0.200	10.42	0.01	279	15	7.5	PGC046261
WALLABY_J131707-183238	199.28276	−18.54411	7837	0.354	11.34	0.01	386	18	4.5	PGC088820
WALLABY_J131708-202440	199.28421	−20.41116	3082	0.910	13.19	0.01	66	18	3.8	–
WALLABY_J131708-202436	199.28481	−20.41012	7027	0.000	13.19	0.01	148	17	5.3	–
WALLABY_J131712-171511	199.30103	−17.25328	2518	0.787	9.95	0.01	228	17	4.9	IC0863
WALLABY_J131713-130921	199.30490	−13.15583	6903	0.899	12.06	0.01	158	17	4.6	IC4217

Table 3 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J131713-125334	199.30829	−12.89285	6842	0.651	14.49	0.02	147	19	2.9	PGC105052
WALLABY_J131714-125817	199.31230	−12.97149	6862	0.000	13.43	0.01	76	17	5.1	PGC944971
WALLABY_J131716-183306	199.32066	−18.55182	7754	0.458	11.39	0.01	371	18	4.1	PGC3098299
WALLABY_J131717-132332	199.32333	−13.39233	13210	0.000	15.22	0.01	126	19	2.6	–
WALLABY_J131721-175129	199.33771	−17.85814	2390	0.910	16.21	0.03	31	19	2.6	–
WALLABY_J131727-161741	199.36508	−16.29474	6386	0.669	14.66	0.03	167	18	4.1	PGC899983
WALLABY_J131729-145304	199.37175	−14.88448	9820	0.383	12.90	0.01	271	19	2.9	PGC918686
WALLABY_J131732-121430	199.38608	−12.24184	6404	0.785	13.67	0.02	130	16	6.2	–
WALLABY_J131734-161058	199.39201	−16.18287	13896	0.840	14.12	0.03	130	19	2.9	PGC083926
WALLABY_J131736-172215	199.40213	−17.37083	2472	0.630	14.27	0.03	83	19	2.5	PGC884404
WALLABY_J131737-172013	199.40622	−17.33697	2500	0.614	15.25	0.05	60	17	5.4	PGC884915
WALLABY_J131738-151033	199.40913	−15.17587	2818	0.380	16.95	0.08	41	19	2.7	–
WALLABY_J131738-201111	199.41147	−20.18659	20977	0.000	13.22	0.01	238	18	3.4	–
WALLABY_J131739-152824	199.41331	−15.47356	2524	0.200	17.10	0.19	72	19	2.3	–
WALLABY_J131739-164913	199.41493	−16.82034	7160	0.611	16.56	0.08	131	18	3.9	–
WALLABY_J131739-213708	199.41531	−21.61914	2933	0.900	12.98	0.01	124	17	5.7	ESO576-023
WALLABY_J131742-120143	199.42580	−12.02880	2473	0.730	12.97	0.02	106	17	5.5	PGC958660
WALLABY_J131742-141341	199.42706	−14.22826	12047	0.902	13.89	0.03	111	19	2.1	PGC927309
WALLABY_J131743-181822	199.42943	−18.30626	4919	0.000	17.10	0.18	80	19	2.6	–
WALLABY_J131745-150812	199.43808	−15.13691	13064	0.650	14.82	0.01	127	18	3.8	PGC915278
WALLABY_J131745-153134	199.43977	−15.52619	11482	0.748	10.51	0.01	169	17	4.9	PGC046307
WALLABY_J131749-150807	199.45532	−15.13538	13713	0.670	17.92	0.15	143	18	4.2	–
WALLABY_J131751-125058	199.46419	−12.84966	13976	0.902	12.46	0.01	196	17	5.1	PGC105057
WALLABY_J131751-185007	199.46519	−18.83544	7251	0.741	16.25	0.02	59	19	3.0	PGC863160
WALLABY_J131753-193408	199.47197	−19.56890	15773	0.722	14.27	0.01	205	19	2.5	PGC853439
WALLABY_J131754-133617	199.47603	−13.60497	6364	0.726	11.08	0.01	279	17	5.1	IC4220
WALLABY_J131755-134723	199.48007	−13.78990	5213	0.540	13.47	0.01	184	19	3.1	PGC933186
WALLABY_J131757-215154	199.48804	−21.86518	3085	0.300	12.61	0.01	188	18	3.7	ESO576-024
WALLABY_J131758-151541	199.49492	−15.26153	13361	0.297	17.09	0.22	439	19	2.9	PGC913493
WALLABY_J131801-192931	199.50797	−19.49214	6127	0.282	14.59	0.02	172	17	4.7	PGC854517
WALLABY_J131802-151824	199.51053	−15.30681	11255	0.632	11.74	0.01	407	19	3.2	PGC912903
WALLABY_J131805-110325	199.52379	−11.05696	14017	0.000	13.44	0.01	41	19	2.9	PGC970510
WALLABY_J131805-191823	199.52461	−19.30642	13808	0.480	14.95	0.03	236	19	2.5	PGC857080
WALLABY_J131806-181910	199.52649	−18.31966	5376	0.200	16.24	0.18	111	19	2.8	–
WALLABY_J131806-135023	199.52861	−13.83978	2624	0.570	14.42	0.03	67	19	2.3	PGC932541
WALLABY_J131807-154958	199.52933	−15.83280	17354	0.241	12.63	0.01	441	19	2.9	PGC905887
WALLABY_J131812-154126	199.55147	−15.69073	11355	0.456	10.68	0.01	532	19	2.9	PGC046334
WALLABY_J131812-120301	199.55206	−12.05034	2696	0.331	14.40	0.02	50	19	2.8	PGC958360
WALLABY_J131815-133536	199.56427	−13.59356	10399	0.550	15.63	0.05	55	19	2.8	–
WALLABY_J131818-145755	199.57501	−14.96551	10931	0.000	15.02	0.03	73	19	2.4	PGC917623
WALLABY_J131824-152926	199.60028	−15.49054	17410	0.510	16.61	0.11	164	27	1.7	–
WALLABY_J131826-154604	199.60962	−15.76793	2844	0.579	11.44	0.01	169	19	3.0	PGC046350
WALLABY_J131827-141337	199.61308	−14.22707	10678	0.784	12.40	0.01	340	33	2.4	PGC927344
WALLABY_J131830-204114	199.62704	−20.68738	1558	0.840	13.47	0.01	56	18	4.0	ESO576-025
WALLABY_J131830-143635	199.62801	−14.60998	2899	0.531	10.03	0.01	234	15	7.1	IC4221
WALLABY_J131830-134228	199.62914	−13.70785	10416	0.000	13.23	0.02	202	19	2.3	PGC934360
WALLABY_J131831-134916	199.63048	−13.82133	10663	0.000	14.68	0.11	171	80	6.3	–
WALLABY_J131833-144940	199.64006	−14.82785	10952	0.298	15.17	0.06	117	19	2.5	PGC919420
WALLABY_J131835-183814	199.64598	−18.63746	7715	0.000	14.03	0.02	153	17	5.3	PGC865656
WALLABY_J131835-211758	199.64659	−21.29967	1955	0.315	11.88	0.01	181	17	5.6	ESO576-026
WALLABY_J131835-173432	199.64775	−17.57569	2526	0.390	15.16	0.05	101	19	2.4	PGC2832066
WALLABY_J131836-145740	199.65038	−14.96127	2122	0.000	13.78	0.02	65	19	2.1	PGC917656
WALLABY_J131840-150339	199.66673	−15.06107	3192	0.241	12.57	0.01	185	16	6.9	PGC916222
WALLABY_J131841-190450	199.67322	−19.08054	2737	0.000	11.24	0.01	82	19	2.9	ESO576-027
WALLABY_J131842-191600	199.67508	−19.26680	15748	0.864	14.90	0.09	219	16	6.8	–
WALLABY_J131843-172044	199.68106	−17.34566	16396	0.783	14.16	0.01	138	18	3.8	PGC884827
WALLABY_J131843-181853	199.68196	−18.31486	6941	0.616	14.51	0.02	167	17	5.7	PGC869711
WALLABY_J131845-153954	199.68954	−15.66504	6480	0.650	16.37	0.13	37	19	2.9	–

Table 3 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J131846-133637	199.69383	−13.61053	6499	0.896	14.29	0.02	111	22	1.9	–
WALLABY_J131847-210939	199.69902	−21.16083	20010	0.000	19.83	0.80	253	18	3.5	–
WALLABY_J131851-123625	199.71277	−12.60716	2991	0.708	14.37	0.05	73	17	4.8	PGC105165
WALLABY_J131853-160803	199.72267	−16.13418	14259	0.200	15.55	0.04	186	18	3.3	–
WALLABY_J131855-170333	199.73228	−17.05934	19890	0.332	13.77	0.01	379	18	4.1	PGC889352
WALLABY_J131855-173800	199.73331	−17.63358	2498	0.670	13.58	0.01	87	17	5.5	PGC046402
WALLABY_J131858-150054	199.74307	−15.01510	11031	0.623	14.58	0.01	203	22	1.9	PGC916843
WALLABY_J131858-183353	199.74568	−18.56490	5393	0.480	17.61	0.36	91	18	4.0	–
WALLABY_J131905-175622	199.77388	−17.93967	6805	0.788	13.55	0.01	123	19	2.6	PGC875082
WALLABY_J131905-142915	199.77425	−14.48775	6848	0.230	16.75	0.11	103	19	3.0	–
WALLABY_J131913-185018	199.80692	−18.83853	14059	0.635	12.61	0.02	193	18	4.2	PGC863175
WALLABY_J131913-140221	199.80740	−14.03940	2610	0.340	17.10	0.20	77	17	4.6	–
WALLABY_J131915-155513	199.81354	−15.92051	6760	0.375	13.33	0.01	238	19	2.2	PGC158692
WALLABY_J131917-121713	199.82129	−12.28696	6966	0.644	14.16	0.01	170	19	2.8	PGC105168
WALLABY_J131917-143959	199.82176	−14.66644	2686	0.490	16.20	0.02	61	36	1.3	–
WALLABY_J131918-161609	199.82562	−16.26934	14095	0.833	12.58	0.01	125	19	3.1	PGC900330
WALLABY_J131918-155021	199.82655	−15.83924	13677	0.790	14.70	0.01	78	33	1.4	PGC905773
WALLABY_J131919-170339	199.82965	−17.06102	19779	0.721	13.97	0.01	148	19	2.0	–
WALLABY_J131920-170105	199.83386	−17.01805	10266	0.521	13.06	0.01	116	33	6.2	PGC890024
WALLABY_J131920-145037	199.83572	−14.84387	2746	0.272	8.86	0.01	405	15	7.2	NGC5073
WALLABY_J131922-150923	199.84212	−15.15663	2907	0.525	12.40	0.01	85	17	5.0	PGC914982
WALLABY_J131923-161251	199.84804	−16.21437	14126	0.885	13.82	0.02	71	24	1.8	–
WALLABY_J131929-200819	199.87137	−20.13876	1955	0.230	16.03	0.07	66	18	4.0	–
WALLABY_J131938-124148	199.90941	−12.69684	2223	0.000	9.76	0.01	249	31	1.6	NGC5079
WALLABY_J131943-112828	199.92958	−11.47448	2570	0.740	11.55	0.01	105	19	3.1	PGC046474
WALLABY_J131943-121613	199.93289	−12.27037	2772	0.975	12.94	0.01	87	21	1.9	PGC955259
WALLABY_J131954-163715	199.97554	−16.62086	2300	0.565	12.95	0.01	134	17	5.0	PGC895848
WALLABY_J131955-171849	199.97919	−17.31385	2689	0.474	12.56	0.01	117	16	6.2	PGC046494
WALLABY_J131955-115759	199.98148	−11.96650	7185	0.960	16.24	0.08	95	19	2.2	PGC959475
WALLABY_J131957-124805	199.98849	−12.80147	3005	0.470	14.83	0.03	38	19	2.9	PGC118097
WALLABY_J131959-171534	199.99808	−17.25963	6453	0.560	13.85	0.02	149	32	2.1	PGC886125
WALLABY_J132001-195929	200.00458	−19.99143	6128	0.594	13.38	0.01	192	18	3.3	PGC169705
WALLABY_J132004-165233	200.02045	−16.87607	5521	0.000	11.91	0.01	172	16	6.3	PGC892277
WALLABY_J132005-144515	200.02390	−14.75441	7022	0.634	11.69	0.01	241	19	2.3	PGC046509
WALLABY_J132007-170653	200.03011	−17.11496	6626	0.521	10.24	0.01	601	32	5.1	PGC046511
WALLABY_J132009-174141	200.03831	−17.69478	7329	0.278	13.98	0.02	224	18	3.3	PGC879010
WALLABY_J132011-201121	200.04654	−20.18929	3209	0.637	16.43	0.07	156	19	2.8	–
WALLABY_J132011-184001	200.04933	−18.66697	5038	0.530	17.23	0.25	54	18	3.9	PGC865209
WALLABY_J132014-141744	200.05904	−14.29574	6944	0.636	10.79	0.01	351	32	6.7	PGC170242
WALLABY_J132014-142732	200.06068	−14.45893	2749	0.000	14.46	0.04	51	18	3.9	HIPASSJ132
WALLABY_J132017-144841	200.07266	−14.81157	2916	0.446	10.98	0.01	219	16	6.0	PGC046523
WALLABY_J132018-163208	200.07814	−16.53567	2277	0.000	10.87	0.01	143	17	5.1	PGC046533
WALLABY_J132018-214925	200.08031	−21.82325	1719	0.442	–	–	655	17	4.6	NGC5084
WALLABY_J132019-123420	200.08286	−12.57226	1431	0.398	9.83	0.01	240	15	7.2	NGC5088
WALLABY_J132020-124006	200.08487	−12.66833	1451	0.428	14.71	0.05	47	19	2.9	PGC949411
WALLABY_J132024-143418	200.10155	−14.57176	6544	0.240	14.10	0.01	186	19	2.7	–
WALLABY_J132025-164032	200.10580	−16.67574	6238	0.000	12.04	0.01	250	18	3.3	PGC3094704
WALLABY_J132029-195030	200.12117	−19.84172	1719	0.231	12.66	0.01	156	18	3.3	ESO576-037
WALLABY_J132029-214845	200.12221	−21.81262	1609	0.200	–	–	435	17	5.2	–
WALLABY_J132030-202723	200.12569	−20.45640	1625	0.000	15.60	0.03	26	17	4.8	–
WALLABY_J132032-170535	200.13640	−17.09309	6922	0.423	14.40	0.03	150	17	4.5	PGC888896
WALLABY_J132034-183542	200.14497	−18.59502	12018	0.542	11.77	0.03	382	18	4.0	ESO576-038
WALLABY_J132036-173846	200.15157	−17.64636	4931	0.417	–	–	190	19	2.9	–
WALLABY_J132037-142743	200.15681	−14.46202	10807	0.460	12.66	0.01	293	19	2.6	PGC924321
WALLABY_J132040-170623	200.16924	−17.10640	7214	0.974	13.06	0.01	93	19	3.0	–
WALLABY_J132040-165353	200.17032	−16.89824	1683	0.311	10.74	0.01	152	31	5.2	PGC046579
WALLABY_J132043-220256	200.18188	−22.04795	2089	0.282	11.20	0.01	191	18	3.6	ESO576-040
WALLABY_J132046-124531	200.19507	−12.75865	5322	0.000	13.43	0.01	119	26	1.7	PGC948039

Table 3 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J132059-173347	200.24643	−17.56325	2318	0.000	17.93	0.14	106	18	3.9	–
WALLABY_J132059-122814	200.24922	−12.47070	2391	0.646	10.55	0.01	265	17	5.3	NGC5097
WALLABY_J132104-144331	200.27020	−14.72540	22386	0.606	14.39	0.01	277	36	2.2	PGC920765
WALLABY_J132109-114742	200.29160	−11.79526	2936	0.393	12.26	0.01	170	19	3.0	PGC158719
WALLABY_J132110-154938	200.29321	−15.82723	6550	0.349	14.37	0.02	206	18	4.4	PGC905961
WALLABY_J132112-182156	200.30246	−18.36568	7185	0.434	15.41	0.03	104	17	5.1	–
WALLABY_J132113-131115	200.30482	−13.18761	19579	0.264	18.78	0.45	143	35	2.0	PGC941464
WALLABY_J132113-164953	200.30612	−16.83163	6615	0.910	13.92	0.02	62	19	2.6	PGC892914
WALLABY_J132114-210618	200.31116	−21.10525	4886	0.687	13.12	0.02	172	18	3.4	PGC832582
WALLABY_J132115-171527	200.31567	−17.25759	16363	0.000	14.20	0.01	139	18	3.6	PGC886175
WALLABY_J132119-130231	200.33159	−13.04198	1307	0.000	11.79	0.01	108	17	5.2	NGC5099
WALLABY_J132121-151214	200.34035	−15.20398	7023	0.690	15.01	0.02	115	19	2.4	PGC914349
WALLABY_J132123-171906	200.34935	−17.31851	4935	0.512	16.56	0.09	88	18	4.4	–
WALLABY_J132124-160619	200.35371	−16.10549	5140	0.456	12.76	0.01	97	19	2.6	–
WALLABY_J132132-152931	200.38641	−15.49211	5228	0.439	13.27	0.02	192	18	3.3	PGC910563
WALLABY_J132134-151101	200.39580	−15.18371	2654	0.446	12.53	0.01	56	27	1.7	PGC3093753
WALLABY_J132136-203629	200.40205	−20.60813	2189	0.536	14.28	0.02	73	18	4.3	PGC839320
WALLABY_J132137-145127	200.40764	−14.85776	2593	0.685	13.30	0.02	94	31	1.9	–
WALLABY_J132141-143530	200.42160	−14.59170	7179	0.811	11.89	0.01	186	18	4.4	PGC158746
WALLABY_J132145-154135	200.43907	−15.69306	5185	0.710	14.95	0.03	154	17	5.0	PGC907724
WALLABY_J132148-150324	200.45250	−15.05669	2748	0.320	15.34	0.06	91	19	2.4	PGC158759
WALLABY_J132148-131222	200.45357	−13.20615	2903	0.518	10.35	0.01	220	17	4.7	NGC5105
WALLABY_J132151-171211	200.46387	−17.20326	7279	0.535	12.23	0.01	288	19	3.1	PGC887136
WALLABY_J132151-144210	200.46548	−14.70277	6578	0.300	13.60	0.02	164	18	4.3	PGC921127
WALLABY_J132154-193738	200.47855	−19.62803	5248	0.359	13.96	0.01	109	16	5.9	PGC852671
WALLABY_J132157-165559	200.49089	−16.93326	6274	0.434	11.15	0.01	72	18	3.5	PGC158767
WALLABY_J132158-170021	200.49402	−17.00603	5208	0.380	17.09	0.20	110	16	5.9	–
WALLABY_J132201-165247	200.50629	−16.87991	7405	0.291	14.47	0.01	207	18	4.4	PGC892190
WALLABY_J132202-161829	200.51155	−16.30827	7027	0.000	18.98	0.44	107	19	3.1	–
WALLABY_J132202-201335	200.51190	−20.22632	1886	0.346	12.78	0.01	111	17	5.5	PGC844632
WALLABY_J132202-174134	200.51242	−17.69295	13896	0.569	12.26	0.01	113	18	4.0	PGC158773
WALLABY_J132205-130816	200.52492	−13.13776	5188	0.585	12.55	0.01	154	18	3.5	PGC158774
WALLABY_J132207-172410	200.53180	−17.40289	7327	0.419	11.88	0.01	267	21	1.9	PGC158775
WALLABY_J132208-164023	200.53586	−16.67328	5046	0.000	12.83	0.01	182	19	3.1	–
WALLABY_J132209-154439	200.54128	−15.74437	7044	0.465	14.10	0.01	181	18	4.0	PGC907078
WALLABY_J132210-175218	200.54358	−17.87181	7068	0.200	14.57	0.03	84	17	5.1	PGC876142
WALLABY_J132211-160558	200.54967	−16.09952	7556	0.818	10.69	0.01	175	19	3.2	PGC158781
WALLABY_J132216-153002	200.56921	−15.50058	2807	0.509	14.57	0.02	106	18	3.8	–
WALLABY_J132218-173518	200.57877	−17.58852	7136	0.970	15.13	0.05	87	19	2.5	PGC880785
WALLABY_J132219-164225	200.58017	−16.70714	6853	0.335	10.69	0.01	418	18	3.9	PGC046710
WALLABY_J132220-143127	200.58676	−14.52443	6635	0.941	13.88	0.02	137	19	2.8	PGC923512
WALLABY_J132222-185842	200.59248	−18.97855	7780	0.000	14.67	0.03	119	16	6.0	PGC861337
WALLABY_J132223-163258	200.59613	−16.54947	5195	0.000	13.12	0.01	113	17	4.8	PGC3093941
WALLABY_J132228-185728	200.61864	−18.95787	7725	0.289	17.14	0.13	125	22	1.9	–
WALLABY_J132229-214334	200.62320	−21.72607	1655	0.527	12.13	0.01	77	19	2.6	–
WALLABY_J132239-214836	200.66472	−21.81012	2065	0.267	15.13	0.04	62	24	1.8	PGC823428
WALLABY_J132241-184811	200.67319	−18.80307	5247	0.701	14.06	0.02	144	32	2.1	–
WALLABY_J132243-172410	200.68170	−17.40290	7321	0.599	15.77	0.03	88	19	2.7	–
WALLABY_J132247-175705	200.69775	−17.95141	16050	0.000	11.61	0.01	100	17	5.4	PGC158818
WALLABY_J132251-183904	200.71487	−18.65123	7717	0.695	14.73	0.01	159	19	3.0	PGC865484
WALLABY_J132255-173325	200.73036	−17.55708	5145	0.000	12.50	0.02	109	16	5.9	PGC881313
WALLABY_J132256-170904	200.73631	−17.15120	16348	0.000	13.23	0.01	200	16	6.9	PGC888007
WALLABY_J132256-191611	200.73659	−19.26997	5210	0.693	18.46	0.06	128	19	2.4	–
WALLABY_J132257-194004	200.73935	−19.66784	6874	0.482	14.65	0.04	142	32	3.8	PGC852127
WALLABY_J132258-144345	200.74168	−14.72917	5117	0.357	14.67	0.03	227	18	4.1	PGC920727
WALLABY_J132259-204701	200.74704	−20.78393	7216	0.307	11.73	0.01	313	19	2.5	ESO576-043
WALLABY_J132303-134113	200.76289	−13.68699	5357	0.870	15.09	0.05	97	18	4.3	–
WALLABY_J132304-235016	200.76843	−23.83789	9898	0.952	12.94	0.01	170	19	2.9	–

Table 3. *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J132306-164944	200.77579	−16.82901	6735	0.940	14.68	0.03	142	16	6.0	PGC892931
WALLABY_J132311-171200	200.79837	−17.20020	7076	0.000	16.28	0.04	85	18	3.4	PGC887194
WALLABY_J132313-152804	200.80537	−15.46798	6677	0.507	15.43	0.05	155	17	4.9	–
WALLABY_J132314-165544	200.81146	−16.92909	6837	0.865	10.31	0.01	241	17	4.7	PGC158838
WALLABY_J132318-182146	200.82591	−18.36299	7477	0.577	18.53	0.79	122	16	5.9	–
WALLABY_J132321-191517	200.83911	−19.25499	13842	0.000	11.49	0.01	245	17	5.4	–
WALLABY_J132321-163748	200.83961	−16.63000	7161	0.975	16.89	0.12	80	19	2.5	–
WALLABY_J132322-173508	200.84389	−17.58566	10236	0.000	11.71	0.01	285	16	6.5	PGC158843
WALLABY_J132328-172821	200.87062	−17.47261	3774	0.000	17.78	0.05	97	19	2.2	–
WALLABY_J132329-165844	200.87083	−16.97898	6934	0.000	12.49	0.01	178	19	2.4	PGC3093942
WALLABY_J132329-164053	200.87177	−16.68148	6886	0.000	16.18	0.05	93	18	3.6	–
WALLABY_J132329-232337	200.87198	−23.39388	1582	0.560	15.07	0.02	88	19	3.2	PGC3097728
WALLABY_J132329-163056	200.87451	−16.51563	5164	0.386	13.28	0.01	197	18	3.9	PGC158849
WALLABY_J132329-175427	200.87491	−17.90754	7255	0.518	12.07	0.01	224	18	3.4	–
WALLABY_J132331-235339	200.87991	−23.89413	12556	0.939	10.78	0.01	143	18	4.3	ESO508-063
WALLABY_J132336-170314	200.90192	−17.05408	7131	0.231	11.12	0.01	411	19	2.0	PGC158856
WALLABY_J132339-190221	200.91382	−19.03918	7383	0.239	11.03	0.01	376	18	4.5	ESO576-045
WALLABY_J132343-162121	200.93050	−16.35592	6974	0.593	15.04	0.04	148	17	5.6	–
WALLABY_J132344-231048	200.93675	−23.17982	4766	0.200	13.42	0.01	215	17	5.3	ESO508-065
WALLABY_J132347-193322	200.94771	−19.55625	5327	0.960	17.39	0.11	63	18	3.4	–
WALLABY_J132350-235951	200.95958	−23.99761	13616	0.513	14.74	0.04	168	18	3.6	PGC794719
WALLABY_J132351-143606	200.96301	−14.60178	1387	0.380	15.47	0.02	46	17	4.6	–
WALLABY_J132353-184841	200.97301	−18.81159	7097	0.356	15.23	0.01	182	19	3.1	PGC863441
WALLABY_J132353-180755	200.97304	−18.13196	16176	0.788	13.85	0.01	225	17	5.5	PGC872311
WALLABY_J132353-230518	200.97404	−23.08817	8897	0.290	14.36	0.01	227	17	5.6	–
WALLABY_J132358-190341	200.99265	−19.06152	6916	0.554	12.23	0.01	266	16	6.3	ESO576-046
WALLABY_J132358-151422	200.99556	−15.23946	14351	0.691	12.67	0.01	267	17	5.6	PGC158870
WALLABY_J132400-175431	201.00140	−17.90860	7055	0.950	15.03	0.05	82	17	5.5	–
WALLABY_J132401-232015	201.00676	−23.33751	13617	0.523	13.30	0.02	76	19	2.2	PGC801965
WALLABY_J132403-170220	201.01408	−17.03898	7066	0.213	11.39	0.01	399	18	4.2	PGC889700
WALLABY_J132409-175407	201.04138	−17.90206	7686	0.200	13.44	0.01	260	15	7.5	ESO576-047
WALLABY_J132415-232043	201.06357	−23.34537	4786	0.715	11.27	0.01	302	19	2.8	ESO508-068
WALLABY_J132415-164212	201.06482	−16.70347	1491	0.693	11.68	0.01	73	17	5.6	–
WALLABY_J132416-164248	201.06958	−16.71357	25657	0.490	11.71	0.01	109	18	3.6	PGC046852
WALLABY_J132419-185912	201.08223	−18.98667	5007	0.200	16.52	0.14	103	18	4.1	–
WALLABY_J132422-171945	201.09370	−17.32926	7000	0.421	11.94	0.01	321	18	3.6	PGC158881
WALLABY_J132422-162744	201.09393	−16.46231	21855	–	–	–	78	18	3.5	–
WALLABY_J132425-204354	201.10745	−20.73200	8351	0.819	15.13	0.02	141	17	5.2	PGC837739
WALLABY_J132427-202554	201.11511	−20.43180	5303	0.764	15.48	0.03	112	19	2.1	–
WALLABY_J132427-170303	201.11546	−17.05086	7017	0.914	12.50	0.01	89	18	3.4	PGC889563
WALLABY_J132427-201307	201.11664	−20.21917	7085	0.533	11.87	0.01	309	16	5.9	PGC844758
WALLABY_J132432-151614	201.13371	−15.27058	2725	0.712	12.72	0.01	106	18	3.6	PGC913431
WALLABY_J132432-155124	201.13594	−15.85692	20777	0.639	12.33	0.01	368	18	3.3	PGC3093842
WALLABY_J132438-224607	201.16112	−22.76884	9022	0.000	12.46	0.01	133	16	6.1	PGC809150
WALLABY_J132442-211714	201.17563	−21.28734	5313	0.860	–	–	36	19	2.5	–
WALLABY_J132451-212416	201.21350	−21.40449	12095	0.840	16.61	0.03	104	18	4.0	–
WALLABY_J132454-201759	201.22787	−20.29981	1744	0.840	–	–	32	18	3.5	–
WALLABY_J132455-192622	201.23212	−19.43949	7999	0.370	15.85	0.05	184	18	3.6	–
WALLABY_J132501-144523	201.25719	−14.75643	14355	0.000	14.62	0.01	161	18	3.9	–
WALLABY_J132506-240322	201.27863	−24.05601	13586	0.400	16.06	0.05	168	18	4.1	PGC794075
WALLABY_J132508-194605	201.28589	−19.76866	5209	0.623	9.80	0.01	308	19	3.0	ESO576-051
WALLABY_J132516-203855	201.31799	−20.64873	2681	0.751	10.96	0.01	147	19	2.4	PGC046939
WALLABY_J132518-211223	201.32611	−21.20657	7300	0.504	14.70	0.03	165	19	2.5	PGC831297
WALLABY_J132519-210812	201.33301	−21.13699	1750	0.647	99.00	0.01	133	17	5.6	NGC5134
WALLABY_J132529-174924	201.37183	−17.82343	5341	0.000	14.36	0.03	96	18	3.6	PGC876914
WALLABY_J132531-220703	201.38039	−22.11786	9307	0.478	15.49	0.01	170	22	1.9	PGC818970
WALLABY_J132531-212650	201.38062	−21.44740	4866	0.554	14.85	0.05	113	19	2.9	PGC828151
WALLABY_J132532-161724	201.38448	−16.29021	6776	0.600	18.80	0.44	43	19	2.6	–
WALLABY_J132534-150540	201.39229	−15.09463	6961	0.000	14.91	0.05	87	39	1.2	PGC915796
WALLABY_J132536-213356	201.40114	−21.56544	8888	0.216	13.66	0.06	126	19	2.8	PGC169726

Table 3 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J132538-163436	201.40982	−16.57674	6845	0.000	15.42	0.12	97	21	1.9	PGC896375
WALLABY_J132540-155525	201.42058	−15.92363	11584	0.660	17.05	0.11	143	19	2.0	–
WALLABY_J132542-164457	201.42499	−16.74931	5402	0.692	12.45	0.01	245	18	4.3	PGC894095
WALLABY_J132543-201405	201.42949	−20.23489	2753	0.582	13.53	0.01	93	17	4.6	PGC169727
WALLABY_J132551-162706	201.46587	−16.45185	6740	0.489	15.24	0.04	141	32	2.2	–
WALLABY_J132552-203408	201.46706	−20.56915	7218	0.785	11.19	0.01	135	18	3.6	ESO576-053
WALLABY_J132552-241252	201.46979	−24.21531	12451	0.782	15.51	0.04	147	16	6.0	PGC792370
WALLABY_J132558-163627	201.49431	−16.60762	6860	0.000	16.22	0.05	177	18	4.2	–
WALLABY_J132603-170150	201.51385	−17.03057	19702	0.390	14.27	0.01	303	35	1.8	PGC889855
WALLABY_J132605-241223	201.52267	−24.20650	9809	0.405	12.98	0.01	298	17	5.6	PGC792431
WALLABY_J132607-171123	201.53264	−17.18989	16209	0.562	12.81	0.01	217	19	2.9	PGC887393
WALLABY_J132607-202810	201.53308	−20.46948	7996	0.339	13.61	0.01	212	37	1.3	PGC841301
WALLABY_J132608-163111	201.53493	−16.51992	6893	0.000	10.85	0.01	201	16	6.5	PGC047009
WALLABY_J132612-162649	201.55411	−16.44702	24161	0.000	13.38	0.04	166	36	3.1	–
WALLABY_J132614-195933	201.55782	−19.99174	7654	0.560	15.07	0.12	52	18	3.4	–
WALLABY_J132618-214400	201.57820	−21.73349	8543	0.340	12.56	0.01	165	18	4.2	PGC159017
WALLABY_J132620-223750	201.58478	−22.63049	9072	0.853	10.39	0.01	326	18	3.8	ESO576-057
WALLABY_J132620-230233	201.58604	−23.04502	5299	0.224	14.64	0.03	150	16	6.8	PGC805667
WALLABY_J132621-155739	201.58885	−15.96107	20719	0.471	15.54	0.07	60	19	2.8	PGC904182
WALLABY_J132625-215123	201.60728	−21.85646	8937	0.827	12.99	0.01	179	19	3.2	PGC822774
WALLABY_J132630-214027	201.62608	−21.67423	7239	0.537	13.44	0.02	200	18	3.7	PGC825195
WALLABY_J132634-222458	201.64465	−22.41634	7220	0.352	14.41	0.04	202	18	4.2	PGC814551
WALLABY_J132635-221419	201.64946	−22.23867	1422	0.570	12.49	0.01	88	15	7.1	ESO576-059
WALLABY_J132637-192904	201.65817	−19.48453	7815	0.256	16.98	0.10	131	18	4.2	–
WALLABY_J132638-215333	201.65918	−21.89257	8705	0.000	13.73	0.02	207	19	3.1	PGC822287
WALLABY_J132648-185557	201.70168	−18.93270	14058	0.733	13.31	0.01	265	19	2.4	PGC861939
WALLABY_J132654-145758	201.72704	−14.96636	5573	0.200	13.04	0.03	142	32	2.0	–
WALLABY_J132655-231825	201.73248	−23.30716	13624	0.000	12.86	0.01	154	34	1.4	–
WALLABY_J132656-203533	201.73692	−20.59253	8444	0.750	16.39	0.06	95	19	2.7	
WALLABY_J132700-205735	201.75368	−20.95994	4829	0.330	15.96	0.07	239	16	6.2	PGC834598
WALLABY_J132709-163509	201.78996	−16.58608	8404	0.330	18.15	0.17	115	25	1.8	–
WALLABY_J132713-202729	201.80748	−20.45820	6777	0.200	12.93	0.01	288	17	4.6	ESO576-061
WALLABY_J132719-170237	201.83286	−17.04370	19123	0.000	16.87	0.16	79	24	1.8	–
WALLABY_J132720-200304	201.83705	−20.05055	8312	0.770	14.71	0.03	155	18	3.3	PGC846919
WALLABY_J132726-173924	201.85995	−17.65669	1624	0.558	12.82	0.01	72	18	3.6	PGC879717
WALLABY_J132729-163924	201.87283	−16.65674	5475	0.000	11.62	0.01	148	19	2.3	PGC3082235
WALLABY_J132729-244239	201.87459	−24.71113	12527	0.393	12.85	0.01	180	18	4.0	PGC786934
WALLABY_J132741-234601	201.92439	−23.76702	9624	0.609	11.93	0.01	103	18	4.0	PGC797290
WALLABY_J132746-161514	201.94221	−16.25396	7006	0.961	19.44	0.55	117	19	2.2	–
WALLABY_J132747-155109	201.94867	−15.85252	5439	0.530	16.43	0.11	26	16	6.3	–
WALLABY_J132749-240921	201.95499	−24.15594	9375	0.733	16.34	0.09	89	20	2.0	–
WALLABY_J132749-180135	201.95750	−18.02651	7295	0.000	16.39	0.06	94	16	6.0	–
WALLABY_J132751-240335	201.96521	−24.05982	9365	0.787	14.71	0.14	140	19	2.1	PGC794034
WALLABY_J132754-155850	201.97554	−15.98063	14379	0.600	14.95	0.03	217	19	3.0	PGC903980
WALLABY_J132759-152532	201.99678	−15.42565	20534	0.337	14.68	0.01	338	18	3.3	PGC911391
WALLABY_J132803-152028	202.01453	−15.34137	24283	0.000	13.10	0.01	244	19	2.4	–
WALLABY_J132804-234953	202.01935	−23.83160	23966	0.592	14.41	0.03	95	19	2.1	PGC796586
WALLABY_J132805-150633	202.02408	−15.10926	23634	0.568	14.02	0.04	210	19	2.4	–
WALLABY_J132807-243847	202.02985	−24.64619	5427	0.240	14.77	0.02	155	19	2.4	–
WALLABY_J132807-162439	202.03032	−16.41097	1835	0.000	13.46	0.01	98	31	1.8	PGC898504
WALLABY_J132807-200957	202.03212	−20.16611	4756	0.760	17.30	0.11	81	19	2.0	–
WALLABY_J132807-205527	202.03291	−20.92421	5831	0.641	15.31	0.05	136	32	2.3	–
WALLABY_J132810-151352	202.04182	−15.23124	16429	0.000	15.63	0.00	115	34	2.6	–
WALLABY_J132811-240540	202.04845	−24.09457	11325	0.665	13.31	0.01	226	19	2.9	PGC793653
WALLABY_J132812-245827	202.05246	−24.97516	13866	0.421	–	–	148	17	4.8	ESO509-023
WALLABY_J132814-165706	202.05974	−16.95185	10056	0.000	17.29	0.14	82	19	2.3	–
WALLABY_J132814-212253	202.06215	−21.38156	5327	0.730	14.44	0.03	108	17	5.7	PGC829007
WALLABY_J132821-193108	202.09023	−19.51904	7353	0.200	13.27	0.01	265	18	4.2	PGC092405
WALLABY_J132826-182936	202.11031	−18.49333	6317	0.560	15.89	0.08	130	19	2.0	PGC867452
WALLABY_J132831-171324	202.13313	−17.22359	1603	0.000	13.67	0.02	21	17	5.2	–

Table 3 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J132844-210150	202.18607	−21.03060	6925	0.529	14.61	0.03	155	19	2.4	PGC833632
WALLABY_J132846-155832	202.19373	−15.97569	20398	0.872	19.29	0.66	113	19	2.2	–
WALLABY_J132848-143813	202.20201	−14.63694	20622	0.000	–	–	97	26	1.7	–
WALLABY_J132850-144019	202.21031	−14.67197	14590	0.340	13.46	0.02	319	18	4.2	PGC921519
WALLABY_J132856-235000	202.23401	−23.83338	4926	0.280	16.51	0.05	88	18	3.9	PGC796529
WALLABY_J132857-242427	202.24074	−24.40762	4555	0.567	12.79	0.01	116	19	2.4	PGC790284
WALLABY_J132858-241435	202.24333	−24.24315	12173	0.251	12.31	0.01	376	25	1.8	PGC792060
WALLABY_J132859-234535	202.24942	−23.75992	9430	0.271	13.92	0.03	188	33	3.0	–
WALLABY_J132903-163458	202.26436	−16.58301	16351	0.322	13.05	0.01	413	34	2.8	PGC896278
WALLABY_J132905-205629	202.27238	−20.94150	5552	0.669	12.24	0.01	201	16	6.5	ESO576-062
WALLABY_J132906-151215	202.27838	−15.20437	20099	0.000	12.92	0.01	72	18	3.6	–
WALLABY_J132906-210123	202.27890	−21.02353	5790	0.000	11.81	0.01	80	18	3.6	PGC833715
WALLABY_J132907-215149	202.27934	−21.86385	5610	0.819	11.33	0.01	233	18	4.0	PGC170256
WALLABY_J132908-171617	202.28619	−17.27147	5522	0.850	15.20	0.06	93	22	1.9	–
WALLABY_J132911-224640	202.30008	−22.77791	8928	0.230	14.98	0.04	212	25	1.8	PGC809031
WALLABY_J132919-162832	202.32935	−16.47570	5898	0.640	14.99	0.03	53	17	5.6	–
WALLABY_J132920-211042	202.33708	−21.17852	675	0.874	12.48	0.01	37	16	6.4	PGC170257
WALLABY_J132922-221123	202.34515	−22.18986	5506	0.346	12.18	0.01	255	22	1.9	ESO576-063
WALLABY_J132926-210008	202.36140	−21.00226	6665	0.380	15.51	0.08	113	17	5.1	–
WALLABY_J132929-251945	202.37083	−25.33031	13355	0.237	11.44	0.01	552	18	4.0	ESO509-028
WALLABY_J132929-235535	202.37227	−23.92661	13819	0.380	15.50	0.07	190	19	2.1	PGC795513
WALLABY_J132930-165046	202.37820	−16.84632	15957	0.302	14.14	0.01	276	18	3.8	PGC892678
WALLABY_J132931-181615	202.38097	−18.27091	1315	0.000	–	–	106	43	1.1	–
WALLABY_J132937-230656	202.40668	−23.11572	9620	0.400	16.97	0.16	169	33	11.1	PGC804658
WALLABY_J132938-154327	202.41089	−15.72434	14672	0.741	11.59	0.01	297	34	5.3	PGC2816879
WALLABY_J132943-161354	202.43236	−16.23166	15787	0.298	13.85	0.01	276	34	3.7	PGC900812
WALLABY_J132944-211051	202.43660	−21.18087	5604	0.783	10.47	0.01	276	32	2.8	ESO576-064
WALLABY_J132947-170153	202.44618	−17.03160	15851	0.000	12.42	0.01	161	18	3.7	PGC3093944
WALLABY_J132947-162327	202.44798	−16.39082	16327	0.490	12.68	0.01	406	17	5.6	PGC898748
WALLABY_J132947-234056	202.44968	−23.68236	5079	0.417	12.57	0.01	231	17	4.7	ESO509-030
WALLABY_J132948-180438	202.45325	−18.07731	1344	0.000	17.59	0.13	123	18	3.3	–
WALLABY_J132949-220314	202.45560	−22.05397	7228	0.279	16.43	0.05	124	19	2.4	PGC820003
WALLABY_J132958-211444	202.49394	−21.24755	15619	0.498	12.23	0.01	244	16	6.0	PGC830791
WALLABY_J132959-235726	202.49895	−23.95731	9341	0.351	14.58	0.03	201	18	3.3	–
WALLABY_J133004-165534	202.51750	−16.92635	5907	0.652	11.98	0.01	149	32	2.5	PGC891429
WALLABY_J133004-221319	202.51823	−22.22209	5147	0.328	12.55	0.01	219	16	5.8	ESO576-068
WALLABY_J133004-205549	202.51845	−20.93190	5294	0.412	10.33	0.01	156	18	3.9	ESO576-069
WALLABY_J133005-173426	202.52396	−17.57405	15932	0.200	14.65	0.02	303	17	5.5	PGC881029
WALLABY_J133006-205341	202.52655	−20.89472	5220	0.000	13.85	0.01	70	19	2.6	–
WALLABY_J133007-212715	202.53052	−21.45410	5783	0.000	12.80	0.01	88	17	4.8	PGC828069
WALLABY_J133008-203319	202.53337	−20.55534	5829	0.500	16.06	0.06	83	19	2.5	–
WALLABY_J133008-221059	202.53372	−22.18315	7253	0.260	15.20	0.02	200	17	5.0	PGC818028
WALLABY_J133010-240841	202.54297	−24.14463	4943	0.841	11.51	0.01	42	16	6.5	ESO509-033
WALLABY_J133011-210731	202.54678	−21.12550	5417	0.864	11.86	0.01	101	19	2.3	PGC832332
WALLABY_J133017-214446	202.57112	−21.74633	7312	0.672	12.36	0.01	248	18	3.6	ESO576-072
WALLABY_J133019-220858	202.57954	−22.14935	5489	0.444	12.24	0.01	213	17	5.3	PGC159099
WALLABY_J133020-221958	202.58582	−22.33398	5519	0.739	13.59	0.02	175	32	1.9	–
WALLABY_J133027-143749	202.61508	−14.63051	25375	0.991	13.43	0.02	318	18	3.3	–
WALLABY_J133027-210654	202.61580	−21.11483	5704	0.000	11.51	0.01	153	20	2.0	PGC159103
WALLABY_J133028-154233	202.61713	−15.70932	14413	0.637	14.09	0.02	158	34	3.8	PGC907565
WALLABY_J133031-231420	202.62897	−23.23916	9275	0.624	11.96	0.02	285	33	3.7	PGC159104
WALLABY_J133033-193217	202.63965	−19.53828	5659	0.337	16.35	0.04	131	18	3.8	–
WALLABY_J133035-205429	202.64630	−20.90831	6159	0.654	13.05	0.01	229	18	4.1	PGC835330
WALLABY_J133035-211808	202.64709	−21.30280	5845	0.603	12.31	0.01	465	17	5.1	PGC159109
WALLABY_J133035-223035	202.64911	−22.50974	5504	0.678	11.69	0.01	166	18	3.9	ESO576-073
WALLABY_J133035-150112	202.64920	−15.02023	4286	0.000	16.67	0.15	134	17	5.0	PGC916798
WALLABY_J133037-243158	202.65576	−24.53253	13039	0.000	14.63	0.01	129	19	2.6	PGC788922
WALLABY_J133037-205541	202.65718	−20.92809	5390	0.279	12.11	0.02	269	18	4.3	ESO576-074
WALLABY_J133039-213728	202.66389	−21.62457	7157	0.200	12.04	0.02	200	17	5.3	ESO576-075
WALLABY_J133039-214217	202.66400	−21.70484	7400	0.541	14.96	0.02	127	26	1.8	PGC824803

Table 3 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J133039-241626	202.66573	−24.27405	7676	0.000	15.61	0.05	76	19	3.1	PGC791735
WALLABY_J133041-180108	202.67087	−18.01906	2621	0.332	13.27	0.01	157	18	4.3	PGC873937
WALLABY_J133041-233009	202.67412	−23.50272	12886	0.449	11.55	0.01	474	17	5.2	ESO509-036
WALLABY_J133042-213957	202.67874	−21.66624	7411	0.487	11.29	0.01	189	18	3.8	PGC159111
WALLABY_J133043-234430	202.68198	−23.74172	7618	0.271	15.09	0.02	182	18	4.1	PGC797574
WALLABY_J133048-251954	202.70424	−25.33180	7960	0.000	11.04	0.01	145	19	2.9	IC4270
WALLABY_J133056-213801	202.73665	−21.63388	7155	0.850	14.73	0.03	110	17	5.5	PGC825736
WALLABY_J133057-211755	202.73775	−21.29880	5397	0.600	18.62	0.25	26	17	5.6	–
WALLABY_J133057-203736	202.74023	−20.62725	5691	0.658	14.36	0.03	147	19	3.1	PGC839075
WALLABY_J133057-212143	202.74092	−21.36210	5921	0.555	16.67	0.08	106	18	4.1	–
WALLABY_J133058-231656	202.74173	−23.28242	9294	0.737	14.92	0.04	54	19	2.8	PGC802625
WALLABY_J133058-215044	202.74286	−21.84576	7366	0.332	11.17	0.01	371	17	5.6	ESO577-001
WALLABY_J133059-160809	202.74904	−16.13606	16417	0.756	14.06	0.02	99	19	2.9	–
WALLABY_J133059-224147	202.74947	−22.69646	7449	0.281	12.97	0.01	264	18	4.1	PGC810223
WALLABY_J133100-173451	202.75143	−17.58103	24449	0.000	13.37	0.02	84	19	2.8	PGC880933
WALLABY_J133102-211852	202.76154	−21.31440	5659	0.543	13.91	0.02	164	19	2.6	PGC829861
WALLABY_J133102-211704	202.76173	−21.28447	5881	0.430	16.56	0.09	93	17	5.4	–
WALLABY_J133103-150604	202.76448	−15.10125	4231	0.200	11.34	0.01	303	16	6.8	PGC047514
WALLABY_J133103-160750	202.76498	−16.13072	5849	0.504	10.71	0.01	387	19	2.9	PGC047515
WALLABY_J133104-212509	202.76884	−21.41940	5615	0.668	14.14	0.02	137	18	3.4	PGC828525
WALLABY_J133105-223647	202.77420	−22.61307	9243	0.240	15.98	0.06	226	19	3.0	PGC811486
WALLABY_J133106-233722	202.77699	−23.62289	13033	0.249	13.06	0.01	357	19	2.7	PGC798898
WALLABY_J133107-190909	202.78099	−19.15250	16292	0.000	12.44	0.01	296	18	4.1	–
WALLABY_J133108-164842	202.78406	−16.81187	7259	0.530	17.43	0.04	133	19	2.9	–
WALLABY_J133108-202916	202.78557	−20.48796	6737	0.000	–	–	120	32	1.9	–
WALLABY_J133113-220341	202.80452	−22.06165	9276	0.476	12.58	0.01	299	18	3.3	PGC819833
WALLABY_J133115-250859	202.81393	−25.14961	7965	0.000	12.26	0.01	115	16	5.8	ESO509-040
WALLABY_J133117-152046	202.82100	−15.34637	10306	0.509	16.02	0.06	169	19	2.3	–
WALLABY_J133117-211744	202.82275	−21.29582	5403	0.755	14.98	0.03	67	19	2.3	PGC830114
WALLABY_J133120-231334	202.83434	−23.22621	7547	0.860	12.60	0.01	144	18	3.4	–
WALLABY_J133122-150652	202.84383	−15.11449	4326	0.000	13.16	0.03	79	17	4.7	PGC915524
WALLABY_J133123-211457	202.84807	−21.24995	5591	0.613	10.79	0.01	237	18	4.1	ESO577-003
WALLABY_J133126-211009	202.86111	−21.16929	5377	0.571	12.59	0.01	216	18	4.1	PGC831784
WALLABY_J133126-232824	202.86134	−23.47346	9060	0.710	15.67	0.05	117	18	3.8	PGC800504
WALLABY_J133128-184541	202.86702	−18.76161	5811	0.200	15.35	0.04	173	18	3.6	PGC092409
WALLABY_J133128-212511	202.86859	−21.41968	2563	0.358	15.23	0.05	111	17	5.4	–
WALLABY_J133129-244032	202.87253	−24.67594	10417	0.258	14.51	0.03	275	33	2.1	PGC787338
WALLABY_J133134-240142	202.89526	−24.02844	7711	0.429	14.92	0.03	148	32	5.8	PGC794402
WALLABY_J133138-233834	202.90816	−23.64364	9959	0.674	12.03	0.02	167	19	2.8	PGC3082250
WALLABY_J133138-232047	202.91171	−23.34666	7506	0.612	13.69	0.07	200	17	4.7	ESO509-042
WALLABY_J133139-212053	202.91655	−21.34818	5514	0.813	15.67	0.10	93	19	2.2	–
WALLABY_J133140-190616	202.91840	−19.10457	5769	0.270	16.03	0.02	78	18	4.4	–
WALLABY_J133141-173508	202.92152	−17.58573	7254	0.487	18.05	0.19	89	19	3.1	–
WALLABY_J133141-231608	202.92227	−23.26893	9196	0.526	16.75	0.10	54	17	4.9	–
WALLABY_J133141-190837	202.92282	−19.14375	5739	0.351	15.78	0.07	151	18	4.3	PGC859246
WALLABY_J133150-212650	202.95915	−21.44726	5587	0.620	14.03	0.01	108	19	2.4	PGC828163
WALLABY_J133151-173014	202.96274	−17.50405	13947	0.570	17.99	0.19	107	17	4.6	PGC882063
WALLABY_J133152-235603	202.96812	−23.93424	7471	0.682	14.14	0.02	105	19	2.9	PGC795350
WALLABY_J133153-240241	202.97235	−24.04482	4721	0.370	13.43	0.01	176	18	4.1	ESO509-043
WALLABY_J133154-212445	202.97491	−21.41287	5735	0.200	14.08	0.03	133	19	2.1	PGC828608
WALLABY_J133158-205217	202.99350	−20.87152	6479	0.415	15.47	0.04	173	18	3.4	PGC835840
WALLABY_J133200-231730	203.00299	−23.29193	12771	0.000	12.60	0.01	164	18	3.4	PGC802492
WALLABY_J133206-220705	203.02815	−22.11821	9215	0.440	11.23	0.01	193	50	2.9	ESO577-005
WALLABY_J133207-184012	203.03058	−18.66999	5735	0.000	13.21	0.06	128	17	5.1	ESO577-006
WALLABY_J133207-220728	203.03156	−22.12469	9507	0.000	17.52	0.24	101	18	3.6	–
WALLABY_J133208-225710	203.03426	−22.95301	5056	0.619	11.22	0.01	266	16	5.9	ESO509-045
WALLABY_J133209-245132	203.03813	−24.85919	7790	0.245	10.57	0.01	439	18	4.2	ESO509-044
WALLABY_J133210-252901	203.04532	−25.48368	10185	0.000	13.81	0.01	58	18	4.4	PGC778431
WALLABY_J133212-211202	203.05409	−21.20055	6000	0.692	10.85	0.01	350	18	4.3	ESO577-007
WALLABY_J133213-223743	203.05547	−22.62886	9059	0.000	13.15	0.01	128	19	3.0	PGC811278
WALLABY_J133214-210542	203.05882	−21.09540	5806	0.710	14.34	0.03	142	18	3.4	–
WALLABY_J133217-231924	203.07106	−23.32338	13361	0.773	13.40	0.03	148	19	2.6	PGC802124

Table 3. *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J133217-210813	203.07573	−21.13611	6000	0.267	16.59	0.08	118	19	2.3	–
WALLABY_J133218-233549	203.07788	−23.59720	12763	0.769	15.14	0.04	114	18	4.2	PGC799213
WALLABY_J133222-200358	203.09412	−20.06610	1711	0.550	15.32	0.08	117	31	2.0	–
WALLABY_J133224-192120	203.10245	−19.35564	15824	0.347	15.67	0.04	239	19	2.7	PGC856385
WALLABY_J133232-140759	203.13490	−14.13328	16058	0.747	15.22	0.07	147	18	3.6	PGC928498
WALLABY_J133236-225242	203.15253	−22.87851	7100	0.770	17.19	0.24	98	17	5.4	–
WALLABY_J133240-203615	203.16786	−20.60423	9862	0.441	12.45	0.02	313	50	0.8	PGC839361
WALLABY_J133242-252831	203.17555	−25.47510	7859	0.729	13.70	0.01	179	21	2.0	PGC778541
WALLABY_J133242-233015	203.17717	−23.50444	10131	0.659	11.24	0.01	93	19	3.2	ESO509-050
WALLABY_J133245-241711	203.18890	−24.28658	13989	0.835	11.68	0.01	302	50	1.9	PGC170262
WALLABY_J133245-211455	203.19083	−21.24885	5329	0.431	15.84	0.05	92	18	4.1	–
WALLABY_J133247-222656	203.19704	−22.44901	7093	0.340	12.39	0.01	271	17	4.5	PGC814063
WALLABY_J133248-184038	203.20102	−18.67744	16082	0.406	14.61	0.06	96	19	2.4	PGC865093
WALLABY_J133253-241226	203.22330	−24.20729	4868	0.000	9.08	0.01	355	19	2.9	IC4280
WALLABY_J133255-154459	203.23013	−15.74984	16464	0.991	13.89	0.02	117	18	4.3	PGC907001
WALLABY_J133256-251035	203.23459	−25.17682	7806	0.000	10.82	0.01	246	32	1.8	ESO509-055
WALLABY_J133256-233558	203.23547	−23.59944	7659	0.225	15.09	0.03	229	18	4.2	PGC799201
WALLABY_J133300-224718	203.25227	−22.78857	12602	0.840	16.04	0.05	107	29	1.6	–
WALLABY_J133301-161437	203.25690	−16.24360	7273	0.909	10.38	0.01	257	16	6.0	PGC090180
WALLABY_J133304-215852	203.26961	−21.98124	5887	0.544	14.27	0.02	174	17	5.1	–
WALLABY_J133308-233234	203.28674	−23.54343	10265	0.820	11.05	0.01	206	18	3.5	PGC088899
WALLABY_J133310-240706	203.29352	−24.11900	4781	0.862	12.32	0.01	138	15	8.1	ESO509-056
WALLABY_J133314-160715	203.30850	−16.12109	6120	0.589	9.12	0.01	683	17	4.9	PGC047717
WALLABY_J133318-210547	203.32883	−21.09661	5849	0.897	14.44	0.06	111	19	3.0	PGC832713
WALLABY_J133319-183129	203.33221	−18.52478	24653	0.969	14.87	0.03	179	300	2.2	PGC867043
WALLABY_J133321-231451	203.34052	−23.24749	12926	0.213	14.25	0.01	279	19	3.2	PGC803012
WALLABY_J133325-220257	203.35800	−22.04941	7005	0.360	12.76	0.02	124	18	4.0	PGC820001
WALLABY_J133328-205305	203.36823	−20.88482	8968	0.230	17.01	0.10	136	19	3.0	PGC835702
WALLABY_J133329-211151	203.37444	−21.19711	7104	0.457	12.74	0.01	201	16	6.0	ESO577-010
WALLABY_J133336-174246	203.40201	−17.71295	14486	0.528	13.92	0.02	211	18	3.4	PGC878739
WALLABY_J133339-160930	203.41618	−16.15843	14649	0.398	14.76	0.05	270	19	2.3	PGC901762
WALLABY_J133348-244525	203.45166	−24.75728	4639	0.452	11.27	0.01	270	16	5.9	ESO509-059
WALLABY_J133351-224126	203.46291	−22.69070	13244	0.685	12.36	0.01	188	100	3.9	PGC810283
WALLABY_J133402-144915	203.50992	−14.82103	20636	0.688	12.91	0.01	358	19	2.9	PGC919477
WALLABY_J133404-205326	203.51979	−20.89067	12871	0.388	12.99	0.02	279	19	2.1	PGC835596
WALLABY_J133404-173739	203.51993	−17.62749	14552	0.532	11.27	0.01	527	18	3.5	PGC159265
WALLABY_J133409-203829	203.54079	−20.64141	5669	0.595	15.20	0.02	121	18	4.3	PGC838953
WALLABY_J133413-225449	203.55507	−22.91387	12881	0.582	13.02	0.01	294	19	2.5	–
WALLABY_J133418-245545	203.57625	−24.92935	4775	0.500	15.60	0.09	129	19	3.2	PGC784590
WALLABY_J133422-234348	203.59373	−23.72934	10208	0.000	14.35	0.03	83	18	4.0	PGC797708
WALLABY_J133423-154937	203.59984	−15.82720	4289	0.474	13.88	0.03	133	23	1.9	PGC905964
WALLABY_J133424-141834	203.60132	−14.30964	6648	0.790	17.16	0.11	65	18	3.5	–
WALLABY_J133425-153304	203.60648	−15.55135	15319	0.000	13.10	0.02	106	19	3.2	PGC909706
WALLABY_J133431-211305	203.63028	−21.21828	12862	0.206	15.37	0.03	157	31	1.5	–
WALLABY_J133431-221037	203.63159	−22.17708	7107	0.743	12.39	0.01	148	19	2.2	PGC170265
WALLABY_J133434-245325	203.64391	−24.89055	10116	0.622	14.71	0.04	152	16	5.9	–
WALLABY_J133437-211108	203.65669	−21.18579	15651	0.000	15.04	0.03	113	19	2.3	–
WALLABY_J133439-234044	203.66336	−23.67915	2601	0.590	11.15	0.01	154	17	5.0	ESO509-064
WALLABY_J133439-154115	203.66397	−15.68755	15318	0.405	12.85	0.01	340	26	1.8	PGC096053
WALLABY_J133440-234722	203.66721	−23.78948	7803	0.948	11.36	0.01	204	19	2.6	ESO509-065
WALLABY_J133440-232652	203.66829	−23.44725	10275	0.647	–	–	288	19	2.1	ESO509-066
WALLABY_J133441-191736	203.67157	−19.29352	9354	0.541	13.92	0.01	240	33	16.5	PGC857229
WALLABY_J133446-233550	203.68947	−23.60380	10803	0.200	13.30	0.01	119	33	2.1	PGC799128
WALLABY_J133446-182427	203.69171	−18.40775	16175	0.399	12.64	0.02	193	50	2.2	PGC868560
WALLABY_J133446-224630	203.69344	−22.77501	8120	0.402	13.56	0.02	132	18	4.0	PGC809053
WALLABY_J133452-175929	203.71852	−17.99159	20616	0.000	14.23	0.03	131	18	3.3	PGC874315
WALLABY_J133457-234236	203.74115	−23.71023	10202	0.000	14.48	0.02	103	18	3.3	PGC797950
WALLABY_J133458-235846	203.74229	−23.97953	11262	0.000	17.21	0.10	124	17	4.7	–
WALLABY_J133502-221122	203.75987	−22.18933	12738	0.444	15.84	0.05	250	18	4.5	PGC817923

Table 3 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J133506-233309	203.77530	−23.55238	10331	0.000	15.06	0.04	25	17	5.0	PGC799617
WALLABY_J133506-154918	203.77750	−15.82190	10261	0.410	16.18	0.06	173	33	2.6	–
WALLABY_J133511-223024	203.79840	−22.50687	5023	0.530	14.55	0.03	110	19	2.4	PGC813178
WALLABY_J133513-214851	203.80719	−21.81427	6196	0.000	15.80	0.04	155	18	4.3	–
WALLABY_J133516-223211	203.81958	−22.53645	7994	0.750	14.16	0.02	131	19	3.1	PGC812688
WALLABY_J133521-145344	203.84120	−14.89557	14561	0.687	13.52	0.03	249	19	2.6	–
WALLABY_J133522-232056	203.84181	−23.34893	7931	0.539	14.36	0.03	112	19	2.4	–
WALLABY_J133522-223319	203.84372	−22.55538	12870	0.638	13.64	0.01	129	19	2.4	PGC812397
WALLABY_J133522-225937	203.84418	−22.99369	2508	0.465	13.24	0.01	135	18	4.4	ESO509-070
WALLABY_J133523-230609	203.84875	−23.10249	7918	0.530	13.93	0.02	181	18	4.5	PGC804806
WALLABY_J133526-145103	203.85973	−14.85086	6389	0.479	13.88	0.02	201	16	5.8	PGC919125
WALLABY_J133530-242103	203.87704	−24.35097	7715	0.368	10.98	0.01	370	17	4.5	ESO509-072
WALLABY_J133530-225209	203.87842	−22.86932	8180	0.256	11.72	0.01	227	19	2.8	ESO509-073
WALLABY_J133533-225159	203.88963	−22.86664	8405	0.200	11.73	0.01	97	19	2.2	–
WALLABY_J133535-212716	203.89626	−21.45424	5659	0.200	15.08	0.03	149	19	3.0	PGC828080
WALLABY_J133537-232753	203.90837	−23.46529	15141	0.000	13.33	0.01	183	34	3.6	PGC800555
WALLABY_J133538-231852	203.90892	−23.31405	10478	0.362	14.73	0.03	169	50	2.4	PGC802219
WALLABY_J133540-251206	203.91794	−25.20171	10169	0.000	12.16	0.01	181	17	4.8	PGC170269
WALLABY_J133540-163840	203.91841	−16.64468	1324	0.649	16.90	0.11	57	17	5.2	–
WALLABY_J133541-170015	203.92328	−17.00421	12684	0.917	15.98	0.02	79	17	4.7	–
WALLABY_J133541-240428	203.92343	−24.07585	2572	0.445	9.35	0.01	322	19	2.8	ESO509-074
WALLABY_J133543-174712	203.93246	−17.78667	14656	0.615	13.96	0.01	187	18	4.4	–
WALLABY_J133545-231543	203.94148	−23.26205	5253	0.000	11.33	0.01	89	20	2.0	PGC047965
WALLABY_J133553-204426	203.97180	−20.74064	1602	0.526	12.92	0.01	80	17	4.5	–
WALLABY_J133556-241859	203.98595	−24.31667	19417	0.200	13.57	0.01	141	18	3.5	PGC791239
WALLABY_J133557-215713	203.98848	−21.95391	12855	0.000	14.41	0.01	132	19	2.2	PGC821294
WALLABY_J133557-234115	203.99004	−23.68768	11396	0.765	13.24	0.04	86	18	3.5	PGC798213
WALLABY_J133558-163414	203.99319	−16.57070	4214	0.397	12.25	0.01	136	33	1.5	PGC896442
WALLABY_J133559-221607	203.99992	−22.26871	8822	0.675	15.70	0.17	139	17	4.7	–
WALLABY_J133600-205437	204.00214	−20.91035	13615	0.258	12.47	0.01	395	17	4.9	PGC835262
WALLABY_J133600-235517	204.00230	−23.92138	2602	0.410	13.37	0.01	111	19	3.1	PGC795544
WALLABY_J133601-171551	204.00656	−17.26433	15081	0.760	11.16	0.01	211	17	5.6	PGC088910
WALLABY_J133605-202342	204.02159	−20.39487	12969	0.996	15.32	0.03	106	49	0.8	PGC842357
WALLABY_J133605-145402	204.02330	−14.90066	6473	0.000	10.05	0.01	167	19	3.1	PGC047994
WALLABY_J133607-222504	204.03273	−22.41759	8845	0.239	12.73	0.01	290	19	2.4	PGC814528
WALLABY_J133609-200251	204.03792	−20.04770	13636	0.558	13.60	0.02	126	34	8.0	–
WALLABY_J133610-234710	204.04263	−23.78629	11370	0.813	11.70	0.01	129	18	3.5	ESO509-078
WALLABY_J133610-223112	204.04309	−22.51966	8473	0.000	10.89	0.01	153	19	2.9	ESO577-011
WALLABY_J133610-220440	204.04478	−22.07807	9070	0.000	11.97	0.01	78	19	3.2	–
WALLABY_J133611-234050	204.04723	−23.68090	11620	0.627	12.11	0.01	310	19	2.4	ESO509-079
WALLABY_J133613-205108	204.05750	−20.85238	5697	0.449	13.59	0.01	166	18	4.2	–
WALLABY_J133617-172451	204.07391	−17.41428	15147	0.327	13.43	0.01	346	19	2.7	PGC883671
WALLABY_J133624-165744	204.09999	−16.96241	12682	0.354	13.92	0.02	310	19	2.2	PGC890978
WALLABY_J133627-224910	204.11429	−22.81950	7044	0.420	13.89	0.01	158	18	3.3	PGC808450
WALLABY_J133629-163858	204.12103	−16.64954	14310	0.247	11.68	0.01	424	34	1.9	PGC895499
WALLABY_J133633-224238	204.13780	−22.71067	6908	0.729	15.60	0.02	76	19	3.0	PGC809962
WALLABY_J133636-182418	204.15244	−18.40516	11906	0.255	11.96	0.01	420	17	5.1	ESO577-012
WALLABY_J133637-201456	204.15553	−20.24823	9843	0.660	16.22	0.07	72	17	4.7	–
WALLABY_J133639-153513	204.16420	−15.58695	16140	0.870	13.71	0.01	255	19	2.6	PGC909196
WALLABY_J133639-234202	204.16553	−23.70071	12227	0.200	15.18	0.03	178	50	2.3	PGC798059
WALLABY_J133643-201220	204.18167	−20.20510	13804	0.253	16.60	0.11	130	34	3.5	–
WALLABY_J133646-240632	204.19247	−24.10905	9210	0.828	12.56	0.01	177	18	4.2	ESO509-081
WALLABY_J133652-205552	204.21738	−20.93114	9653	0.682	15.07	0.02	173	33	1.6	PGC834965
WALLABY_J133658-203244	204.24388	−20.54558	9055	0.727	12.35	0.01	316	19	2.4	PGC840196
WALLABY_J133659-153212	204.24626	−15.53693	6515	0.368	13.15	0.02	171	17	5.4	PGC909870
WALLABY_J133701-244552	204.25540	−24.76448	5223	0.308	13.70	0.01	172	17	5.3	PGC786339
WALLABY_J133701-155704	204.25763	−15.95132	4294	0.385	15.64	0.03	106	43	1.1	PGC904339
WALLABY_J133702-175223	204.26137	−17.87313	12817	0.668	15.91	0.05	230	17	5.2	–
WALLABY_J133702-205515	204.26163	−20.92095	7715	0.000	13.39	0.02	39	19	2.8	PGC835130

Table 3 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J133708-171154	204.28447	−17.19851	11732	0.715	12.41	0.01	194	18	4.3	PGC887156
WALLABY_J133708-203705	204.28670	−20.61832	22459	0.510	14.28	0.02	100	17	4.7	PGC839249
WALLABY_J133711-184457	204.29747	−18.74919	11882	0.000	13.25	0.02	62	18	3.3	PGC864211
WALLABY_J133711-175505	204.29837	−17.91814	12859	0.482	14.91	0.01	122	44	1.0	PGC875412
WALLABY_J133713-153712	204.30594	−15.62015	4274	0.402	17.83	0.34	89	18	4.0	–
WALLABY_J133715-222946	204.31480	−22.49617	5681	0.273	13.28	0.02	195	18	3.6	PGC813330
WALLABY_J133716-150451	204.31845	−15.08093	6589	0.588	10.23	0.01	519	18	3.4	PGC048102
WALLABY_J133717-200343	204.32121	−20.06200	13933	0.839	14.86	0.03	97	19	3.0	PGC846813
WALLABY_J133717-174332	204.32333	−17.72560	20735	0.479	13.77	0.01	186	19	3.0	PGC878491
WALLABY_J133718-194336	204.32735	−19.72696	12986	0.503	12.73	0.01	220	34	4.0	PGC088913
WALLABY_J133720-200032	204.33469	−20.00900	13942	0.418	13.65	0.03	134	34	3.2	PGC847496
WALLABY_J133722-195652	204.34442	−19.94777	9092	0.000	15.29	0.04	125	18	3.7	–
WALLABY_J133725-150627	204.35425	−15.10761	7997	0.390	16.04	0.07	76	18	3.6	–
WALLABY_J133725-155412	204.35619	−15.90358	14728	0.000	13.96	0.02	57	27	1.7	PGC904965
WALLABY_J133727-223204	204.36700	−22.53494	9118	0.921	11.79	0.01	186	19	3.2	PGC088915
WALLABY_J133735-163755	204.39586	−16.63206	14297	0.729	11.23	0.01	607	22	1.9	PGC048133
WALLABY_J133735-211259	204.39856	−21.21488	15675	0.613	11.33	0.01	344	17	4.8	PGC170278
WALLABY_J133735-232851	204.39951	−23.48084	13007	0.899	16.27	0.43	104	21	1.9	–
WALLABY_J133736-185135	204.40303	−18.85977	7743	0.470	16.95	0.10	74	18	4.1	–
WALLABY_J133737-234516	204.40640	−23.75481	9240	0.259	13.06	0.01	289	18	3.3	PGC797422
WALLABY_J133739-213902	204.41595	−21.65062	12611	0.779	14.45	0.02	150	33	2.4	–
WALLABY_J133741-150605	204.42180	−15.10139	7991	0.792	11.20	0.01	271	16	7.0	PGC048144
WALLABY_J133744-144639	204.43547	−14.77775	10799	0.227	15.26	0.01	257	19	2.5	PGC920080
WALLABY_J133752-204640	204.46980	−20.77802	9395	0.285	13.35	0.02	245	18	4.2	PGC092418
WALLABY_J133756-182406	204.48569	−18.40173	10958	0.671	13.31	0.03	236	16	5.8	PGC159315
WALLABY_J133756-240727	204.48689	−24.12435	9132	0.892	11.10	0.01	206	20	2.0	ESO509-084
WALLABY_J133801-225524	204.50612	−22.92373	6975	0.413	11.14	0.01	419	18	4.3	ESO509-085
WALLABY_J133801-211734	204.50656	−21.29259	12441	0.320	19.42	0.78	103	19	2.7	–
WALLABY_J133802-175254	204.51198	−17.88176	1354	0.781	7.17	0.01	137	13	10.1	NGC5247
WALLABY_J133806-205136	204.52881	−20.86011	12121	0.739	13.09	0.01	243	18	3.9	PGC836018
WALLABY_J133809-152425	204.53931	−15.40704	4008	0.520	14.91	0.04	123	17	5.3	PGC911608
WALLABY_J133809-195322	204.53964	−19.88992	15894	0.784	11.60	0.01	130	17	4.6	PGC159324
WALLABY_J133809-241011	204.54002	−24.16989	6876	0.620	15.41	0.04	146	32	3.6	PGC792845
WALLABY_J133811-204047	204.54634	−20.67985	12914	0.000	11.32	0.01	217	19	2.2	ESO577-015
WALLABY_J133815-211811	204.56288	−21.30309	12904	0.525	12.30	0.01	240	18	4.1	PGC830015
WALLABY_J133815-172755	204.56396	−17.46542	4300	0.617	15.18	0.02	154	17	5.4	PGC882780
WALLABY_J133815-212023	204.56509	−21.33976	9823	0.000	13.21	0.01	122	17	4.8	–
WALLABY_J133818-233325	204.57660	−23.55717	11590	0.529	14.36	0.01	207	19	2.6	PGC799589
WALLABY_J133819-203750	204.58163	−20.63120	15908	0.476	13.63	0.01	208	19	2.8	PGC839048
WALLABY_J133819-180033	204.58170	−18.00926	13911	0.268	13.83	0.02	256	19	2.4	PGC874092
WALLABY_J133821-225200	204.58878	−22.86648	9119	0.510	15.38	0.06	228	19	2.7	PGC807789
WALLABY_J133822-195211	204.59253	−19.86973	16481	0.300	14.26	0.01	167	34	4.1	PGC849371
WALLABY_J133823-202709	204.59692	−20.45297	1792	0.280	15.88	0.05	47	18	3.8	–
WALLABY_J133825-214905	204.60585	−21.81869	5856	0.768	12.59	0.01	190	18	4.4	–
WALLABY_J133825-165250	204.60612	−16.88059	13604	0.923	14.59	0.01	103	18	4.0	PGC892194
WALLABY_J133830-174448	204.62828	−17.74688	12874	0.770	15.09	0.03	75	31	1.5	PGC878189
WALLABY_J133832-200024	204.63693	−20.00679	16396	0.354	14.00	0.05	303	17	5.2	PGC847501
WALLABY_J133834-174954	204.64249	−17.83167	12691	0.873	13.62	0.02	209	19	2.5	PGC876746
WALLABY_J133836-202908	204.65038	−20.48575	658	0.670	12.55	0.01	37	17	5.7	ESO577-016
WALLABY_J133837-240848	204.65674	−24.14686	5455	0.829	10.65	0.01	248	18	4.2	ESO509-087
WALLABY_J133840-135814	204.66855	−13.97054	14868	0.243	14.68	0.02	214	19	3.1	PGC930724
WALLABY_J133841-225918	204.67168	−22.98865	5714	0.000	14.49	0.05	100	37	1.3	–
WALLABY_J133841-182702	204.67189	−18.45062	10165	0.200	15.69	0.08	190	19	2.8	PGC867986
WALLABY_J133841-202243	204.67273	−20.37819	12868	0.530	14.86	0.02	200	19	2.9	–
WALLABY_J133842-222443	204.67549	−22.41211	10230	0.439	14.19	0.03	229	42	1.1	PGC814578
WALLABY_J133842-214839	204.67670	−21.81091	5780	0.351	12.20	0.01	221	17	5.4	ESO577-017
WALLABY_J133844-153815	204.68594	−15.63753	14847	0.384	13.35	0.01	276	18	3.7	PGC908495
WALLABY_J133845-243304	204.68811	−24.55143	16810	0.200	13.07	0.01	369	18	3.7	–
WALLABY_J133851-165026	204.71637	−16.84082	13582	0.730	16.35	0.08	121	21	1.9	–

Table 3 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J133854-190117	204.72601	−19.02156	9386	0.200	15.59	0.01	169	33	3.1	–
WALLABY_J133900-160039	204.75148	−16.01098	2149	0.619	15.51	0.02	96	31	1.9	PGC903581
WALLABY_J133903-211446	204.76419	−21.24627	10023	0.660	13.41	0.01	173	33	9.0	PGC830734
WALLABY_J133904-240956	204.76747	−24.16566	9413	0.367	12.81	0.02	311	19	3.1	ESO509-089
WALLABY_J133905-201720	204.77451	−20.28865	9509	0.437	11.81	0.01	105	17	5.4	PGC843793
WALLABY_J133910-174532	204.79181	−17.75901	12955	0.405	15.16	0.01	181	22	1.9	PGC878018
WALLABY_J133912-153835	204.80241	−15.64318	11615	0.307	15.09	0.03	253	26	1.7	PGC908405
WALLABY_J133916-181515	204.81779	−18.25428	10177	0.729	14.47	0.04	166	18	4.2	PGC870524
WALLABY_J133917-181144	204.82143	−18.19577	13992	0.649	16.24	0.03	62	18	3.8	–
WALLABY_J133924-151331	204.85333	−15.22528	8152	0.560	17.60	0.10	110	20	2.0	–
WALLABY_J133925-191308	204.85774	−19.21897	1456	0.820	16.66	0.09	48	18	3.3	PGC858239
WALLABY_J133925-155322	204.85822	−15.88956	12983	0.327	14.15	0.02	270	34	4.7	PGC905132
WALLABY_J133929-192931	204.86972	−19.49365	9505	0.933	11.67	0.01	260	18	4.4	ESO577-019
WALLABY_J133931-181852	204.88173	−18.31452	12830	0.000	14.11	0.02	106	23	1.8	PGC869771
WALLABY_J133933-145203	204.88887	−14.86772	10916	0.627	14.71	0.03	262	20	2.0	–
WALLABY_J133933-222957	204.89095	−22.49931	7000	0.000	11.27	0.01	234	18	3.5	ESO577-020
WALLABY_J133939-234522	204.91530	−23.75641	11729	0.662	11.28	0.01	172	19	2.0	PGC170279
WALLABY_J133940-171258	204.91806	−17.21632	10419	0.545	13.57	0.01	258	19	2.8	PGC886879
WALLABY_J133942-250143	204.92621	−25.02812	12979	0.405	13.96	0.01	190	19	3.0	–
WALLABY_J133944-165003	204.93498	−16.83440	13042	0.000	13.98	0.01	53	18	3.9	PGC892838
WALLABY_J133949-221815	204.95782	−22.30433	5746	0.435	11.44	0.01	302	19	2.6	ESO577-022
WALLABY_J133949-220132	204.95842	−22.02556	5838	0.200	11.07	0.01	320	19	2.7	ESO577-021
WALLABY_J133950-163125	204.95924	−16.52378	13514	0.862	17.52	0.14	207	34	6.8	–
WALLABY_J133950-195837	204.96152	−19.97730	12082	0.288	13.40	0.02	227	17	4.6	PGC847897
WALLABY_J133951-233716	204.96622	−23.62101	11890	0.513	14.44	0.02	189	19	2.0	PGC798926
WALLABY_J133953-182902	204.97191	−18.48411	16309	0.000	13.23	0.01	239	19	2.3	PGC867572
WALLABY_J134002-252831	205.01245	−25.47525	5134	0.487	11.37	0.01	303	19	2.9	IC4315
WALLABY_J134004-235850	205.01695	−23.98069	19739	0.410	15.18	0.02	239	43	1.1	PGC794929
WALLABY_J134006-195923	205.02773	−19.99004	12404	0.000	11.73	0.03	115	19	2.8	PGC170280
WALLABY_J134008-190909	205.03389	−19.15262	14683	0.816	16.34	0.08	38	17	5.3	PGC859152
WALLABY_J134015-153211	205.06554	−15.53651	11622	0.000	12.40	0.01	178	33	2.7	PGC3093843
WALLABY_J134017-200502	205.07077	−20.08471	11725	0.859	11.63	0.01	129	18	3.5	PGC846427
WALLABY_J134018-211518	205.07545	−21.25532	12689	0.436	12.59	0.01	343	18	3.3	PGC830637
WALLABY_J134019-235122	205.08269	−23.85632	6503	0.000	9.64	0.01	285	16	6.7	NGC5260
WALLABY_J134020-222109	205.08617	−22.35262	5807	0.678	16.20	0.02	109	18	4.2	–
WALLABY_J134024-233429	205.10098	−23.57472	11239	0.910	17.09	0.24	78	17	5.3	–
WALLABY_J134026-235514	205.11029	−23.92065	19735	0.365	11.36	0.01	665	19	2.9	ESO509-093
WALLABY_J134028-151237	205.11749	−15.21041	13003	0.805	14.56	0.03	143	19	2.5	PGC914289
WALLABY_J134030-172613	205.12733	−17.43698	18133	0.000	12.67	0.03	230	18	3.7	PGC883286
WALLABY_J134032-210112	205.13664	−21.02014	23002	0.801	14.09	0.01	68	19	3.1	PGC833775
WALLABY_J134034-215548	205.14331	−21.93014	9944	0.718	11.13	0.01	250	16	6.4	ESO577-023
WALLABY_J134034-183340	205.14343	−18.56113	12947	0.637	12.44	0.01	173	50	4.0	PGC866648
WALLABY_J134045-211913	205.18990	−21.32043	9715	0.464	14.62	0.01	173	18	4.2	PGC829788
WALLABY_J134053-184433	205.22371	−18.74268	7806	0.501	16.26	0.13	193	19	2.4	PGC864269
WALLABY_J134054-194402	205.22890	−19.73402	14531	0.427	12.86	0.01	322	19	3.0	PGC851226
WALLABY_J134056-233626	205.23596	−23.60753	11235	0.354	12.98	0.01	264	17	4.9	PGC799103
WALLABY_J134059-191452	205.24709	−19.24778	7800	0.368	18.25	0.36	50	18	3.5	–
WALLABY_J134102-231256	205.26012	−23.21580	6973	0.000	12.99	0.01	196	17	4.9	PGC803356
WALLABY_J134103-181309	205.26518	−18.21922	16534	0.400	14.82	0.02	243	19	2.3	PGC871076
WALLABY_J134112-233409	205.30373	−23.56912	12709	0.000	14.66	0.01	91	19	2.5	PGC799475
WALLABY_J134115-145751	205.31575	−14.96433	16367	0.544	14.99	0.03	245	18	3.6	PGC917629
WALLABY_J134120-181446	205.33554	−18.24624	23401	0.880	14.77	0.07	164	20	2.0	PGC870656
WALLABY_J134123-164916	205.34827	−16.82110	25792	0.000	17.83	0.17	122	19	2.4	–
WALLABY_J134123-191204	205.34903	−19.20135	11676	0.600	15.58	0.02	151	33	1.8	–
WALLABY_J134126-191407	205.35852	−19.23549	7092	0.424	15.94	0.03	96	19	2.4	PGC857987
WALLABY_J134126-203030	205.36218	−20.50868	7090	0.360	14.57	0.02	169	17	4.7	PGC840788
WALLABY_J134128-192219	205.37035	−19.37212	7733	0.388	12.09	0.03	303	20	2.0	ESO577-025
WALLABY_J134129-155821	205.37257	−15.97257	7625	0.569	13.99	0.01	162	17	5.1	PGC904072
WALLABY_J134138-155809	205.41199	−15.96937	16178	0.630	15.43	0.03	218	18	3.8	PGC904118

Table 3 – *continued*

Name	RA J2000	Dec	v_{helio} km s^{-1}	b/a	W1 mag	δW1 mag	W_{50} km s^{-1}	δW_{50} km s^{-1}	S/N	alias
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
WALLABY_J134143-183508	205.42917	−18.58568	14826	0.428	12.29	0.01	121	34	2.2	PGC159404
WALLABY_J134145-191825	205.43782	−19.30719	16279	0.685	12.81	0.01	275	34	2.0	PGC857088
WALLABY_J134146-240828	205.44377	−24.14123	6580	0.200	13.13	0.01	203	33	1.5	PGC793130
WALLABY_J134147-233627	205.44934	−23.60753	11261	0.501	11.14	0.01	439	17	4.7	ESO509-094
WALLABY_J134150-175703	205.46146	−17.95104	16653	0.518	12.82	0.01	233	17	5.6	–
WALLABY_J134150-180435	205.46173	−18.07644	9995	0.876	13.72	0.01	226	33	3.9	–
WALLABY_J134152-233157	205.46739	−23.53263	23359	0.401	12.59	0.01	445	18	3.6	PGC799851
WALLABY_J134152-183716	205.46924	−18.62121	16447	0.878	13.84	0.06	99	18	3.8	PGC865883
WALLABY_J134155-204254	205.48306	−20.71515	16377	0.303	14.74	0.03	173	34	2.0	PGC837948
WALLABY_J134201-221411	205.50728	−22.23638	14797	0.817	14.85	0.02	81	19	2.5	PGC817267
WALLABY_J134211-151930	205.54686	−15.32502	16203	0.716	13.98	0.02	155	18	3.4	PGC912698
WALLABY_J134219-211125	205.58055	−21.19153	16456	0.275	15.41	0.01	156	19	2.9	PGC831511
WALLABY_J134221-150432	205.59064	−15.07558	20353	0.748	13.74	0.01	226	19	2.7	PGC916081
WALLABY_J134223-203030	205.59689	−20.50838	7551	0.000	15.27	0.02	112	17	4.8	PGC840752
WALLABY_J134227-152601	205.61523	−15.43386	16323	0.000	15.48	0.05	170	20	2.0	PGC911289
WALLABY_J134233-200414	205.63651	−20.07228	10069	0.710	13.07	0.01	201	17	5.2	–
WALLABY_J134233-194620	205.64079	−19.77239	15667	0.281	12.27	0.01	407	18	3.8	PGC092423
WALLABY_J134237-205247	205.65302	−20.87741	14573	0.000	12.46	0.01	170	34	1.6	PGC835664
WALLABY_J134241-233218	205.67091	−23.53831	7034	0.795	15.32	0.02	110	24	1.8	PGC799791
WALLABY_J134247-193454	205.69855	−19.58041	1412	0.890	15.12	0.05	50	16	6.3	ESO577-027
WALLABY_J134248-171356	205.70038	−17.23233	16658	0.000	13.18	0.01	110	19	2.2	PGC886604
WALLABY_J134249-182801	205.70648	−18.46694	11702	0.231	13.82	0.02	216	19	2.7	PGC867807
WALLABY_J134250-184550	205.71115	−18.76388	9640	0.200	15.48	0.02	151	18	4.5	PGC864002
WALLABY_J134251-220324	205.71387	−22.05668	5917	0.000	14.85	0.02	53	24	1.8	PGC3094713
WALLABY_J134251-171732	205.71558	−17.29233	16773	0.343	13.93	0.02	252	18	4.1	PGC885630
WALLABY_J134251-194244	205.71724	−19.71070	10274	0.780	14.28	0.05	124	33	1.6	PGC851547
WALLABY_J134255-205424	205.73193	−20.90704	9813	0.316	14.38	0.01	224	17	5.1	PGC835343
WALLABY_J134258-193943	205.74046	−19.66536	10052	0.619	12.60	0.01	266	19	2.7	PGC852153
WALLABY_J134259-182447	205.74696	−18.41313	15230	0.000	16.02	0.02	69	18	4.0	–
WALLABY_J134259-182459	205.74893	−18.41663	11572	0.000	16.02	0.02	98	23	1.9	PGC868422
WALLABY_J134303-195001	205.76657	−19.83376	16675	0.000	15.99	0.74	63	19	2.0	–
WALLABY_J134306-193556	205.77538	−19.59910	10275	0.220	14.14	0.01	219	18	3.7	PGC853044
WALLABY_J134308-201304	205.78345	−20.21734	9630	0.879	11.55	0.01	108	17	5.0	PGC170287
WALLABY_J134310-185010	205.79437	−18.83628	11758	0.000	13.52	0.02	146	16	6.5	PGC863137
WALLABY_J134312-192238	205.80029	−19.37744	10660	0.879	14.39	0.03	182	18	4.2	PGC856105
WALLABY_J134327-172004	205.86324	−17.33447	9197	0.000	10.64	0.01	140	19	3.2	PGC088922
WALLABY_J134337-210403	205.90492	−21.06785	12649	0.000	12.00	0.01	170	33	2.1	PGC088923
WALLABY_J134339-192202	205.91428	−19.36737	10515	0.200	12.93	0.01	318	17	4.9	PGC856228
WALLABY_J134352-235533	205.96748	−23.92623	6757	0.000	12.95	0.01	133	27	1.7	PGC795504
WALLABY_J134354-192105	205.97704	−19.35139	10446	0.690	13.24	0.01	180	19	3.1	PGC856455
WALLABY_J134405-193119	206.02271	−19.52193	9860	0.565	13.34	0.01	165	33	3.2	PGC854080
WALLABY_J134414-182804	206.06213	−18.46793	7107	0.000	13.61	0.01	69	18	3.9	PGC867785
WALLABY_J134437-235646	206.15729	−23.94613	6749	0.346	13.41	0.01	285	17	4.6	PGC184067
WALLABY_J134447-230014	206.19714	−23.00412	5907	0.512	14.08	0.02	128	19	2.9	PGC806122
WALLABY_J134455-201659	206.23050	−20.28311	23685	0.000	12.31	0.01	75	31	1.5	PGC843903
WALLABY_J134456-151509	206.23738	−15.25251	8772	0.000	11.69	0.01	241	18	3.5	PGC170292
WALLABY_J134456-200837	206.23747	−20.14386	12397	0.825	11.95	0.02	180	18	3.3	PGC184085
WALLABY_J134501-155202	206.25693	−15.86746	8879	0.462	11.09	0.01	381	19	2.7	PGC048747
WALLABY_J134510-222447	206.29552	−22.41330	6847	0.300	18.21	0.24	118	19	2.0	–
WALLABY_J134513-191046	206.30731	−19.17960	9979	0.483	12.45	0.01	125	31	1.5	PGC858808
WALLABY_J134514-151038	206.31215	−15.17740	8829	0.200	15.33	0.05	134	33	6.0	–
WALLABY_J134533-145830	206.38770	−14.97513	11747	0.200	11.51	0.01	540	33	5.7	PGC091311
WALLABY_J134539-240853	206.41548	−24.14880	5581	0.235	12.05	0.01	284	18	3.9	PGC793086
WALLABY_J134600-212228	206.50302	−21.37463	6044	0.000	13.30	0.01	148	32	2.1	–
WALLABY_J134603-230141	206.51302	−23.02826	5906	0.000	14.25	0.04	117	48	0.9	PGC805856
WALLABY_J134705-163120	206.77203	−16.52230	4340	0.200	13.19	0.01	246	17	5.3	PGC897055
WALLABY_J134710-205822	206.79268	−20.97294	6495	0.395	12.86	0.01	225	33	1.4	PGC834430
WALLABY_J134737-201752	206.90689	−20.29802	16470	0.370	17.43	0.18	118	18	4.4	–

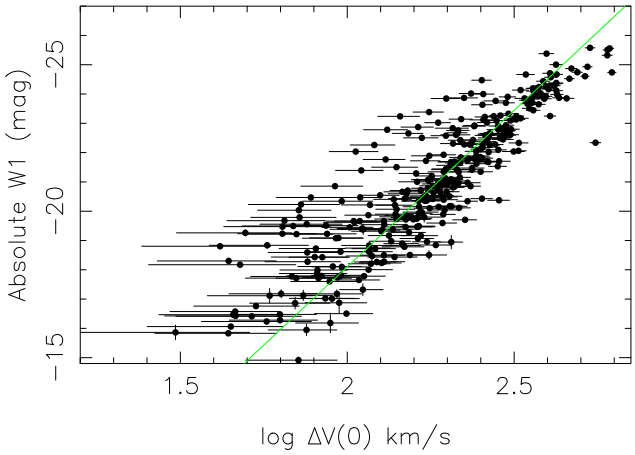

Figure 9. TFR for the NGC5044 field. Fourteen 3σ deviates from the regression line have been removed. Only two of these are starburst candidate galaxies with W1 − W2 > 0.25 mag. Magnitude error bars are mostly vanishingly small. The line is the *hyperfit*. There is a skew distribution around the fit, but this does not seem to be related to unusual redshifts or inclinations.

in inclinations between DELVE and Table 3 is 15 deg, similar to what was found in the previous section, with DELVE delivering a slightly better χ^2. With 2.5σ deviates rejected, the vertical scatter is 1.27 mag.

Armed with accurate positions from HyperLeda and DELVE, we can perform a match with a catalogue of galaxy magnitudes prepared for the 4MOST collaboration (Taylor et al. 2023) and based on the VISTA Hemisphere Survey. We present the *J*-band TFR in Fig. 16. The vertical scatter is 1.45 mag. Also available from HyperLeda are I magnitudes from the DENIS survey (Paturel et al. 2005). Fig. 17 shows this TFR, and its vertical scatter is 0.81 mag. This catalogue covers the Southern hemisphere with cutouts for the Magellanic Clouds and low Galactic latitudes. The χ^2 per degree of freedom for these four TFRs is given in Table 6. The TFR for the DENIS data is well fit by equation (14) of the SFI++ sample of Springob et al. (2018). The magnitude extinction correction ($1.05 \log(a/b)$) of Giovanelli et al. (1994) does not change χ^2 significantly. We provide slopes and zeropoints of the *hyperfits* in Table 8, but note that these quantities will be determined with larger samples in the full WALLABY survey.

The χ^2 was calculated with an intrinsic TFR scatter of 0.40 mag (Masters et al. 2014) and an assumed inclination error of 12.5 degrees (see below). The photometric uncertainties in DELVE and 4MOST are included but are negligible.

4.4 WALLABY detections with no optical counterpart

In Tables 1–3 WALLABY pilot survey galaxies not detectable in *WISE* or DECaLS and free from close companions are a fraction of a percent of the total. In a sample of 1700 galaxies statistical juxtaposition of noise in the datacubes will occur, and, although all SoFiA detections have been examined, confirmation is needed. Deeper optical imaging and higher resolution H I maps are desirable for these objects. These sources extend over multiple WALLABY beams, so the velocity range is not smeared out. They are being studied intensively in another WALLABY program (O'Beirne et al., in preparation), and thus we shall not go into detail here. Their relationship to those Ultra Diffuse Galaxies (UDGs; Mancera Pina et al. 2019, 2020), which are not H I rich (For et al. 2023) remains to be explored. Fig. 18 gives the zeroth and first moment maps of H I for these optical non-detections.

5 DISCUSSION

5.1 Combined fields

We combine the TFRs for the three fields in Fig. 18. The intercepts of the three TFRs are not different within the uncertainties. According to the IRSA dust map viewer the Schlafly & Finkbeiner (2011) extinction in Vela varies from $E(B\text{-}V) = 0.17$ mag in the NE region of our field to 0.475 mag in the SW. In the W1 bandpass this range is (0.037, 0.103) mag in A_{W1}. This is not responsible for the scatter in Fig. 7 or Fig. 19. The other two fields are high latitude fields with $E(B\text{-}V) = 0.03$ and 0.06 mag.

5.2 A simulation

The full WALLABY survey will address the growth of structure in the Universe, measuring $f\sigma_8$ with high statistical accuracy (Said et al. 2022) and discovering large scale flows in the accessible volume. As a simple test we inserted a 500 km s^{-1}bulk flow in a 10^4 Mpc^3 volume of the NGC 5044 field at 5500 km s^{-1}redshift, as depicted in Fig. 19. Scatter of 1.04 mag rms from the (W1, $\Delta V(0)$) TFR was added to the Hubble flow and the input flow velocity was recovered with 2.5σ significance from 156 galaxies. This bodes well for the full survey and suggests that expectations based on the simulations of Boubel et al. (2024) with 7341 ALFALFA galaxies will be realized. The average TFR scatter assumed in their error model for these 156 galaxies was 0.93 mag.

The full WALLABY survey will cover regions of high and low extinction, and therefore the W1 magnitudes have a significant advantage for measuring peculiar velocities on large scales. If these measurements can be automated for $\sim 10^5$ galaxies, this approach would be preferred. If not, Table 6 suggests that DELVE DR2 would provide a good alternative, better still if that can be combined with an extinction map to correct the I magnitudes and a higher throughput filter on the DELVE survey than the PGC catalogue to ensure unique matching.

5.3 New positions of the Great Attractor and Vela from the WALLABY addition to CosmicFlows4

Fig. 20 shows comparatively a map of the Norma region as seen from the computation of the linear velocity field and corresponding density field, thanks to peculiar velocities (Courtois et al. 2023). The left panel shows the reconstruction with CosmicFlows4 (CF4) galaxies only (black dots) while the right panel shows the reconstruction with the WALLABY pilot data added (coloured dots) to CF4. Before the addition of WALLABY data the Great Attractor was located a bit closer to us at SGX-SGY=(−30,0) Mpc h^{-1}. The new location is at SGX-SGY=(−40,+10) Mpc h^{-1} (see Tables 7a and b). The signal to noise of the Linear density field reconstruction at the Great Attractor location is a strong 15σ. We also note that the velocity flow around Coma cluster is modified. Now Coma appears as a clearly detached cluster.

This figure corresponds to the Great Attractor position in the Supergalactic plane SGX-SGY. It is a slice of ±5 Mpc h^{-1} thickness, centred at supergalactic SGZ= 0 Mpc h^{-1}. The blue and red background colours show the linear density field recovered from the CosmicFlows4 compendium of peculiar velocities (Courtois et al. 2023). The black dots are galaxies from the CosmicFlows4 catalogue.

Table 4. N5044-DR3 galaxies with two published spectra.

WALLABY	PGC no	Name	AGC/HIPASS no	Vsys km s^{-1}	Width km s^{-1}	err km s^{-1}	S/N	flux Jykm s^{-1}	Vwal km s^{-1}	Wwal km s^{-1}
J130943-163617	45650	PGC045650	HIPASSJ1309-16	2575	340		5.4	27.18	2574	347
J130943-163617	45650	PGC045650	HIPASSJ1309-16	2576	339	14	8.9	7.62	2574	347
J131234-173225	45877	PGC045877	AGC530053 shg05	2756	385	19	2.2	12.68	2757	389
J131234-173225	45877	PGC045877	HIPASSJ1312-17	2762	376	13	10.0	2.48	2757	389
J132019-123420	46535	NGC5088	HIPASSJ1320-12	1430	235	16	6.6	39.67	1431	240
J132019-123420	46535	NGC5088	AGC530112 shg05	1432	242	13	14.1	42.77	1431	240
J132043-220256	46574	ESO576-040	AGC029511 shg05	2087	185	12	11.6	16.20	2089	191
J132043-220256	46574	ESO576-040	HIPASSJ1320-22	2082	179	16	5.8	3.75	2089	191
J132947-175747	47394	NGC5170	AGC029724	1503	524	18	3.9	71.37	1503	523
J132947-175747	47394	NGC5170	HIPASSJ1329-17	1502	528	13	11.8	5.95	1503	523
J133541-240428	47948	ESO509-074	AGC029872 shg05	2592	354	18	4.1	2.45	2572	322
J133541-240428	47948	ESO509-074	HIPASSJ1335-24	2586	345	17	4.9	8.66	2572	322
J133802-175254	48171	NGC5247	AGC029924 shg05	1356	137	8	53.5	57.73	1354	137
J133802-175254	48171	NGC5247	HIPASSJ1338-17	1355	138	13	32.9	56.62	1354	137

Table 5. N5044-DR3 galaxies with 1 published spectrum.

WALLABY	PGC no	Name	AGC/HIPASS no	Vsys km s^{-1}	Width km s^{-1}	err km s^{-1}	S/N	flux Jykm s^{-1}	Vwal km s^{-1}	Wwal km s^{-1}
J125907-121329	44549	PGC044549	HIPASSJ1259-12	1308	97	13	11.0	14.13	1312	80
J125931-140755	44610	NGC4862	AGC520377 shg05	6456	143	17	4.7	3.84	6451	145
J125956-192430	44681	PGC044681	HIPASSJ1259-19	829	52	16	6.3	5.03	826	45
J130026-151708	44761	NGC4877	HIPASSJ1300-15	4933	602	15	7.4	16.39	4920	600
J130053-132655	44829	NGC4897	HIPASSJ1300-13	2555	247	13	12.7	29.33	2551	230
J130056-135640	44841	NGC4899	HIPASSJ1301-13B	2653	273	100	34.7	21.09	2654	277
J130059-143042	44847	NGC4902	HIPASSJ1300-14	2631	256	13	12.5	27.93	2624	240
J130107-133053	936912	PGC936912	HIPASSJ1300-13B	1308	65	14	8.7	7.15	1306	62
J130213-145817	44977	NGC4924	HIPASSJ1302-14A	4856	266	14	9.3	8.36	4864	267
J130213-171416	44982	PGC044982	HIPASSJ1302-17	750	117	13	11.5	27.24	726	39
J130225-174046	45006	PGC045006	AGC520412 shg05	4652	480	21	5.7	11.18	4649	475
J130311-172230	45073	PGC045073	HIPASSJ1303-17A	2965	66	25	7.7	10.69	2963	41
J130314-172514	45084	PGC045084	HIPASSJ1303-17B	742	118	13	63.1	93.27	741	118
J130815-210002	45524	ESO575-061	AGC029274	1649	165	17	5.0	2.94	1649	168
J130947-101916	45652	PGC045652	HIPASSJ1309-10	1206	207	16	5.8	14.02	1210	196
J131035-214450	45721	ESO576-003	AGC029327 shg05	2959	231	16	6.6	11.27	2962	238
J131305-195830	45911	ESO576-011	AGC029361	2757	309	11	12.4	13.23	2759	306
J131321-185558	45935	ESO576-012	AGC029366 shg05	6148	235	17	4.9	3.19	6149	237
J131330-193244	45952	NGC5022	AGC029371	3001	392	18	4.3	8.46	3005	398
J131334-152553	45958	PGC045958	HIPASSJ1313-15	2503	81	15	7.9	12.19	2501	73
J131702-104612	46252	IC4216	HIPASSJ1316-10	2839	257	16	5.9	7.06	2838	263
J131706-161516	46261	PGC046261	AGC530085 shg05	2631	288	19	2.9	8.27	2636	279
J131739-213708	46299	ESO576-023	AGC029435 shg05	2947	188	25	2.7	6.34	2933	124
J131835-211758	46373	ESO576-026	AGC029453	1953	163	18	3.9	2.40	1955	181
J131920-145037	46441	NGC5073	AGC530097 shg05	2745	385	15	8.0	16.07	2746	405
J131934-124159	46473	NGC5079	AGC530104	2228	235	16	6.6	1.92	2223	249
J132018-214925	46525	NGC5084	HIPASSJ1320-21	1719	662	100	8.7	102.72	1719	655
J132148-131222	46664	NGC5105	AGC530120 shg05	2903	219	12	11.1	14.30	2903	220
J132430-210729	46878	IC4237	AGC029585 shg05	2667	325	18	3.8	14.03	2607	205
J132441-194214	46889	ESO576-050	AGC029590	1969	189	14	8.7	17.01	1967	192
J132500-240035	46920	ESO508-071	AGC029599 shg05	7378	315	18	4.5	3.14	7388	319
J133017-214446	47450	ESO576-072	AGC029740	7314	228	100	5.6	2.45	7312	248
J133058-215044	47505	ESO577-001	AGC029757	7361	379	100	3.4	4.35	7366	371
J133103-150604	47514	PGC047514	AGC530277 shg05	4232	300	18	4.2	6.22	4231	303
J133208-225710	47599	ESO509-045	AGC029792	5047	278	19	2.8	3.20	5056	266
J133209-245132	47600	ESO509-044	AGC029789	7791	450	100	2.8	4.09	7790	439
J133314-160715	47717	PGC047717	tmc06	6342	206	100	3.4	2.35	6120	683
J133933-222957	48300	ESO577-020	AGC029955 shg05	6998	249	19	2.7	2.67	7000	235
J133949-221815	48323	ESO577-022	AGC029961	5760	285	17	4.7	2.62	5746	302
J134002-252831	48346	IC4315	AGC029965	5163	322	50	3.8	3.10	5134	303

*Notes.*shg05 = Springob et al. (2009)
ctf09 = Courtois et al. (2009)
tmc06 = Theureau et al. (2007)

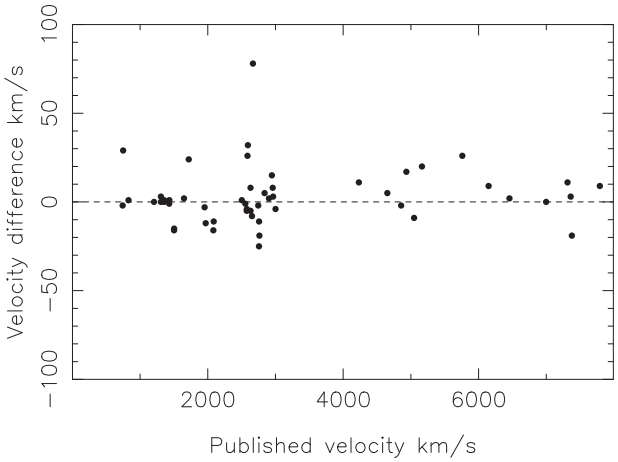

Figure 10. Comparison of WALLABY velocities from Tables 4 and 5 in the NGC 5044 field with published heliocentric velocities.

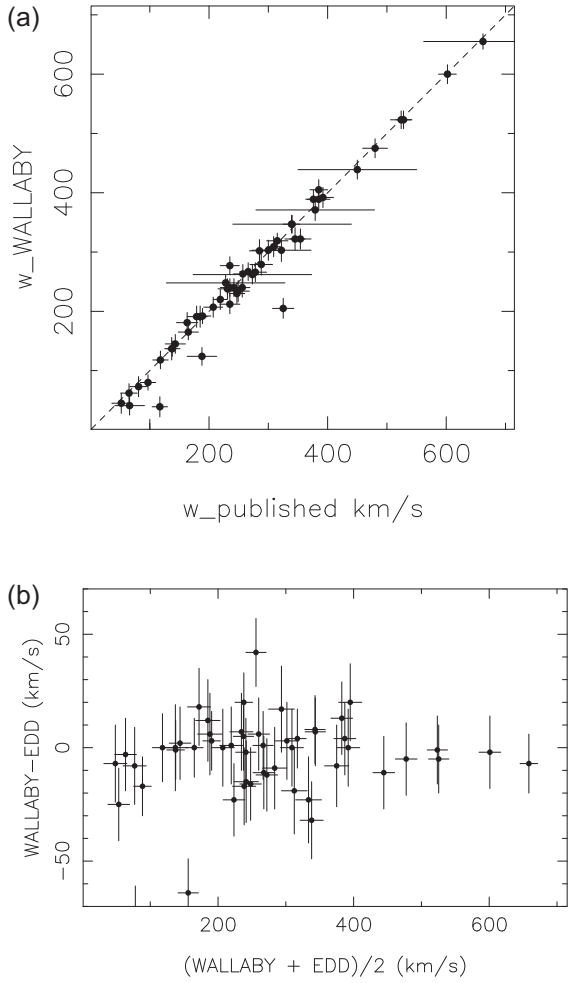

Figure 11. Comparison of WALLABY velocity widths from Tables 4 and 5 in the NGC 5044 field with velocity widths compiled in EDD (Tully et al. 2009). The dashed line is the 1:1 line. **Below:** The difference plot with the three most deviant points removed.

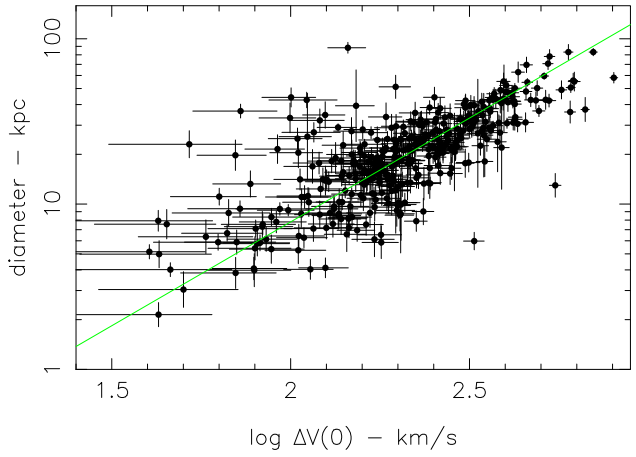

Figure 12. The relation between PGC diameter and inclination corrected velocity width for the NGC5044 field. A Hubble constant of 73 km s^{-1}Mpc^{-1} was adopted. The line is the *Hyperfit*.

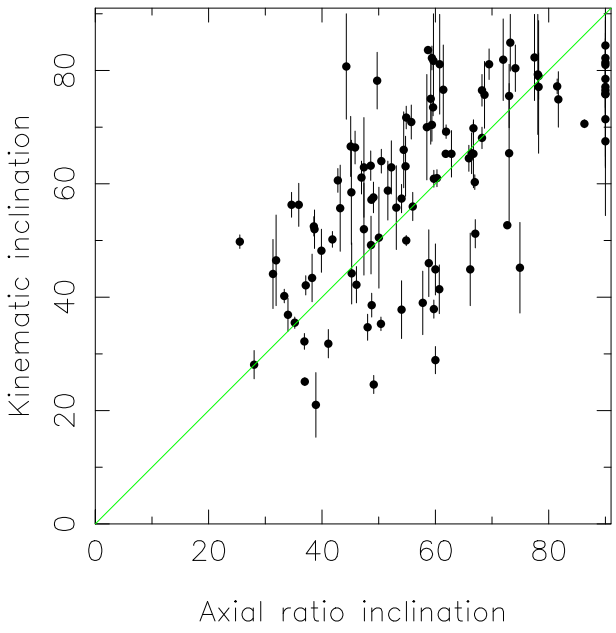

Figure 13. Inclinations from WALLABY kinematic modelling (Deg et al. 2022) and those used here from ellipse fitting. The latter have not had uncertainties measured. The green line is equality.

The coloured dots are the WALLABY pilot data. Also the velocity flow around Coma is modified. Now Coma appears as a clearly detached cluster. This figure corresponds to the Vela supercluster position in the Supergalactic plane SGY-SGZ. It is a slice of ±5 *i.e.* 10 Mpc h^{-1} thickness, centred at supergalactic SGX= −130 Mpc h^{-1}. The blue and red background colours show the linear density field recovered from the CosmicFlows4 compendium of peculiar velocities (Courtois et al. 2023). The green square is the position of Vela as found by Kraan-Korteweg et al. (2017) from redshift surveys. The red triangle was the position of Vela as found by Courtois et al. (2019) using the V-web of CF3. The black dots are galaxies from the CosmicFlows4 catalogue. The coloured dots are the WALLABY pilot data.

The region scrutinized in Fig. 21 is a slice at supergalactic SGX=−130 Mpc h^{-1}. A clear overdensity of galaxies is seen on

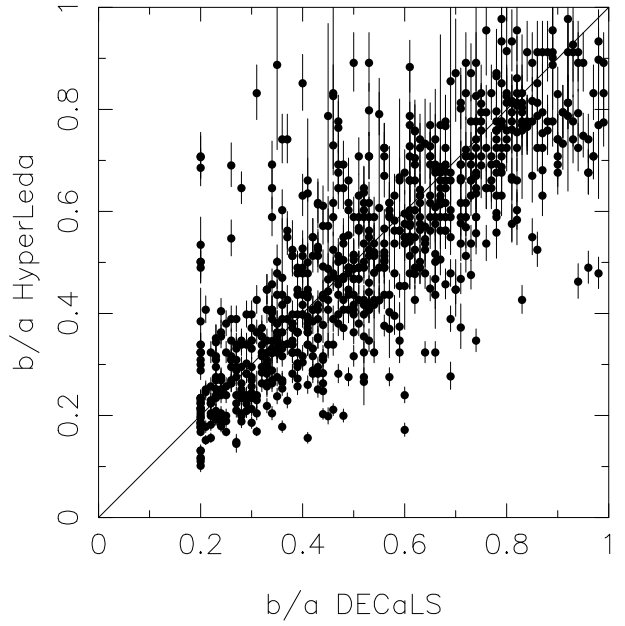

Figure 14. Axial ratios from HyperLeda for PGC galaxies and those used here from ellipse fitting. The line is the 1:1 line.

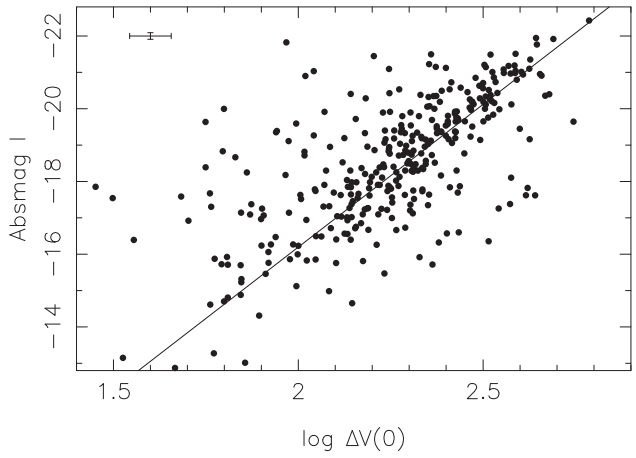

Figure 15. TFR from DELVE DR2 i magnitudes for galaxies with PGC positions in the NGC 5044 field. The error bar is an average velocity width uncertainty and a peculiar velocity uncertainty of 200 km s^{-1}. The line is the TFR of Springob et al. (2018).

Table 6. TFR Quality of linear fit, NGC 5044 field.

TFR	Source	Figure	S/N cutoff	χ^2	n
i mag	DELVE DR2	15	none	1.48	325
J mag	4MOST	16	3.7	5.34	189
I mag	DENIS	17	3.0	3.30	303
W1 mag	WISE	9	3.7	3.20	344

*Note.*Linear fits were used, not *hyperfits*.

both sides of the zone obscured by the Milky Way disc (vertical on this figure) at SGZ=−130 Mpc h^{-1}. This is what was named the 'Vela wall' of the 'Vela supercluster': a filament running across the ZOA and extending in total to more than 6000 km s^{-1} from the redshift surveys' point of view. The black arrows on this figure correspond to the peculiar (gravitational) velocity field. A

Table 7. (a) Large scale structure parameters Positions of the Great Attractor (GA) and Vela supercluster in CF4 alone in black and with the addition of WALLABY in bold. The radius of the corresponding spherical overdensity is given in the last column. (b) Bulk flow velocities computed within sphere of radius 20 Mpc h^{-1} centred around GA [−40,5,0] Mpc h^{-1} and Vela [−130,40,−140] Mpc h^{-1}. The addition of pilot phase 2 WALLABY data modifies the amplitude and direction of the velocity field. The CF4 alone values (in black) and strongly modified when adding WALLABY data (in bold) in the region of Vela supercluster where the bulk flow changes direct ion towards negative supergalactic X and Z axis and is enlarged by an amount of 50 km s^{-1} reaching 394 km s^{-1} This shows that Vela is a main gravitational actor in the southern sky large-scale structures.

Structure	SGX	SGY	SGZ	Overdensity at the peak	Distance to δ=0
	Mpc h^{-1}	Mpc h^{-1}	Mpc h^{-1}		Mpc h^{-1}
GA	−49/**−40**	4/**5**	8/**0**	0.7/**0.9**	30/**40**
Vela	−130/**−130**	−15/**40**	−150/**−140**	−0.4/**0.5**	60/60
Structure	vx	vy	vz	Vbulk	–
	km s^{-1}	km s^{-1}	km s^{-1}	km s^{-1}	–
Great Attractor	−153/**−102**	42/**78**	52/**37**	206/**188**	–
Vela.	220/**−349**	82/**−39**	252/**−83**	353/**394**	–

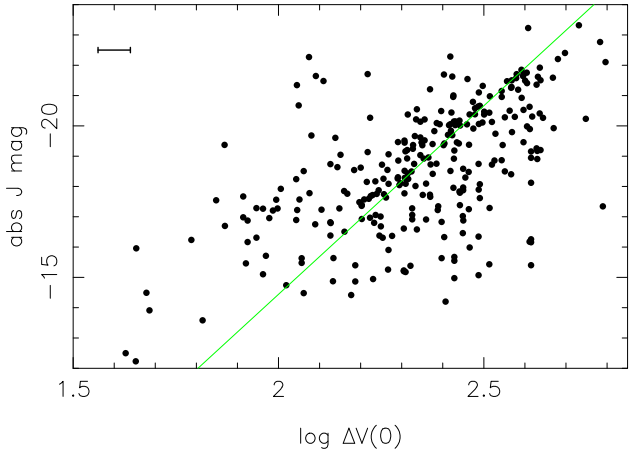

Figure 16. TFR in J magnitudes from 4HS (the 4MOST Hemisphere Survey) for the NGC 5044 field. The error bar shows an average velocity width uncertainty.

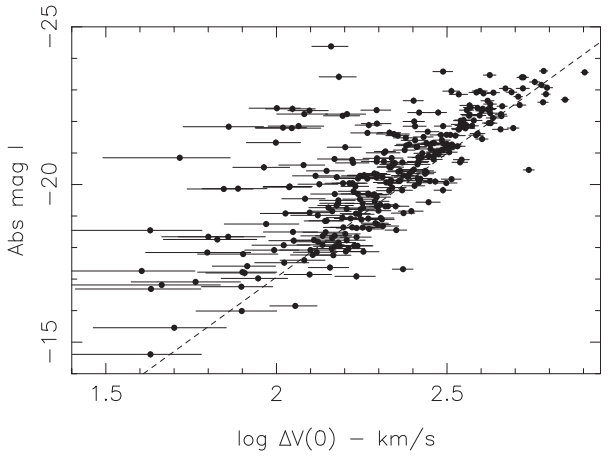

Figure 17. TFR in I magnitudes from the DENIS survey for the NGC 5044 field. The dashed line is from Springob et al. (2018).

Table 8. Summary of data and cuts.

Target group	Fie-lds	Area deg^2	PDR2	Table tally	SNR cut	incl cut†	used TFR
N4808	1	30	231	201 T1	3.7	96	29
Vela	1	30	203	143 T2	3	34	71
N5044	4	120	1326	1238 T3	3.7*	26	348
Total	6	180	1760	1582	–	398	448

*Notes.**also a 3σ TFR deviates cut
†Numbers cut for $i > 45$ deg

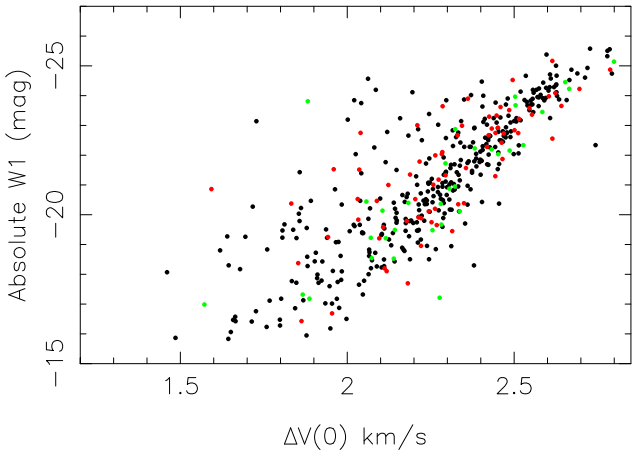

Figure 18. The three WALLABY phase 2 pilot survey TFR relations combined. NGC5044 is in black, Vela is in red, and NGC4808 in green Schlegel et al. (2005).

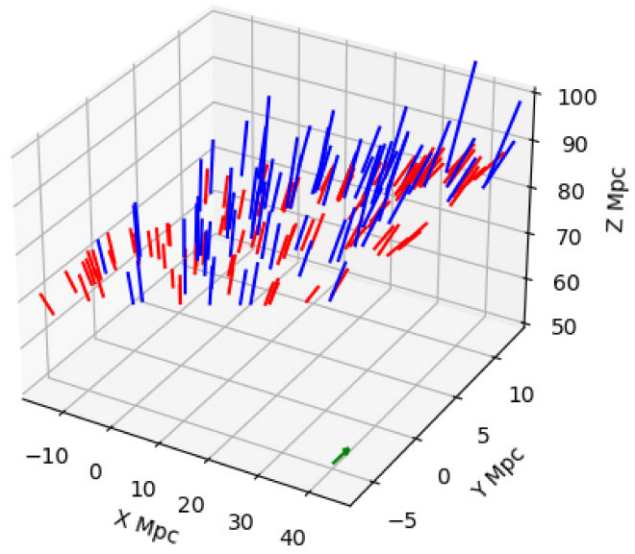

Figure 19. A portion of the NGC 5044 field in real space, where the Z coordinate is in the radial direction, and the tangential coordinates point N (Y) and E (X). The difference between the TFR distance times H_0 and the redshift is the peculiar velocity, shown by the length of the arrows. Red is redshift and blue is approaching. These have been scaled down by a factor of ten for clarity. A bulk flow of 500 km s^{-1} depicted by the barely visible green arrow in the foreground, added to these data can be retrieved, as described in Section 5.2.

striking result is that, quite independently, the new WALLABY data confirms the Vela position published by Kraan-Korteweg et al. (2017). The Vela supercluster extends from side to side across the ZOA. Since it is a 3D velocity field, on the figure these vectors are projected onto the plane SGY-SGZ. The red triangle on this Fig. 21, was published in 2019 by Courtois et al. as a point of convergence of the V-web located at SGX-SGY-SGZ (−13 000; 7000; −9000) km s^{-1}. This location is the central region of a gravitational basin of attraction located on the sky in the Vela constellation direction.

This Vela large-scale structure is not part of the larger Shapley attractor as one can see that there is a clear delimitation of the streamlines splitting between these two basins. Consequently, the cross-analysis of redshift surveys data (Kraan-Korteweg 2017) and the new addition of WALLABY data in the southern hemisphere to the peculiar velocity surveys data confirms the position of the Vela supercluster at SGY-SGZ=(40; −140) Mpc h^{-1}. The signal to noise of the linear density field reconstruction at the Vela location has strong 4σ significance. We also note that before the WALLABY data the cluster NGC5044 was not well reconstructed by Cosmic-Flows-4 catalogue. Even worse there was an under-density (a cosmic void) reconstructed at its location. The addition of the WALLABY pilot data, causes NGC5044 now to appear on the map at SGY-SGZ=(100;0) Mpc h^{-1}.

CosmicFlows4 is the most advanced representation of the flow field of galaxies within 20 000 km s^{-1}, using redshift independent distances. A multiwavelength baryonic TFR has been adopted for this purpose, and in the Appendix we describe the calibration $pro-tem$ of our single wavelength (W1) baryonic TFR, so that pilot survey distances can be introduced into the CF4 data base, and a new reconstruction run. Reconstruction is the process of calculating the gravitational field of galaxies with known distances, and thus, in the linear approximation, the peculiar velocity field. At this stage we are not able to include WALLABY selection effects in the reconstruction, as we are still learning what these are. The S/N ratio cutoff of the WALLABY survey is now known (Westmeier et al. 2022; Murugeshan et al. 2024), which will allow selection effects to be simulated.

The first plot (Fig. 20) is a SGX-SGY slice at SGZ=0. The red blob across the Zone Of Avoidance (ZOA) (which is horizontal SGY=0) and SGX=−40 Mpc h^{-1} is the Great Attractor. Fig. 21 is perpendicular to it. The effect of adding the WALLABY pilot survey galaxies is to greatly increase the spatial resolution of the flow field.

6 CONCLUSIONS

The WALLABY Pilot Survey has taught us a number of things that can be built on in the full survey, which is now under way.

(i) The TFR is clearly observed in the three fields of the WALLABY Pilot Survey Phase 2 and can be used for redshift independent distances. A summary is given in Table 9. There are ten times the number of galaxies in these fields as there are for these parts of the sky in CosmicFlows4.

(ii) Axial ratios of galaxies from isophotal ellipse fitting in the optical correlate with disc inclinations from WALLABY kinematic modelling and with HyperLeda axial ratios. The scatter in this relation allows our axial ratio uncertainties to be estimated, and this comes close to explaining the TFR scatter we see. Measuring

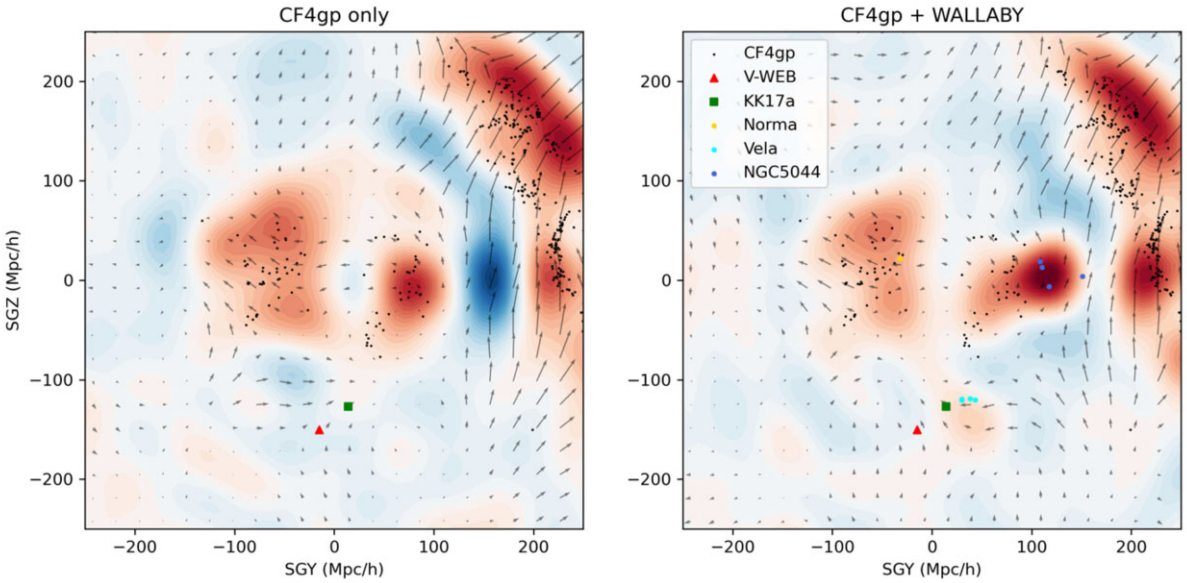

Figure 20. In the left panel is the flow field solution computed with only CF4 data. In the right panel is the solution using distances from CF4 + WALLABY. WALLABY data points are in colour. The background red shading corresponds to mass overdensity and blue to relative underdensity. The arrows show the direction of the consequent flow field.

Table 9. Hyperfits.*.

Field	Slope	±	β mag	± mag	σ mag	± mag
NGC 4808 Fig 3	−10.20	0.76	2.54	1.82	0.65	0.13
Vela Fig. 7	−11.57	0.84	5.51	1.99	0.90	0.12
NGC 5044 Fig 9	−10.68	0.30	3.26	0.69	0.94	0.06

*Notes.** $M(W1) = \alpha \log \Delta V(0) + \beta$. Slope $= \alpha$; σ = scatter.
Columns headed ± are uncertainties in columns to their left.

and controlling errors in inclination are crucial to understanding the scatter in the TFR and estimating distances.

(iii) A diameter/velocity-width scaling relation with scatter comparable to the TFR can be readily constructed from HyperLeda diameters. Further work is warranted on investigating the origin of this relation and potentially combining it with the TFR to obtain better distance estimates.

(iv) For WALLABY sources matched to PGC galaxies, 4MOST magnitudes based on the VISTA Hemisphere Survey can be used to make a J magnitude TFR, and DELVE (DENIS) magnitudes

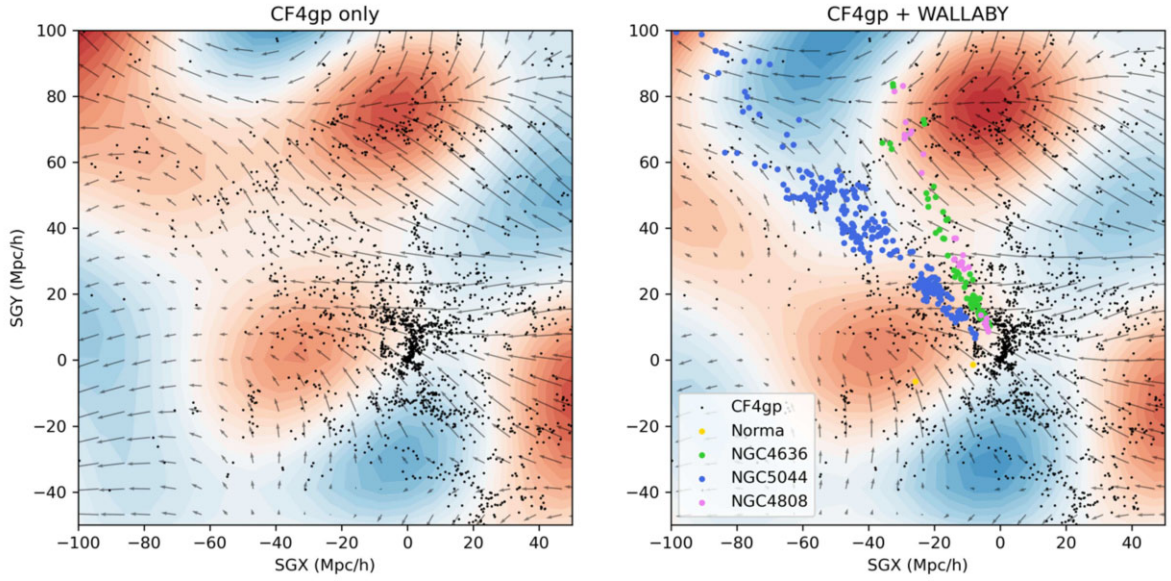

Figure 21. A SGY-SGZ slice at SGX=−130 Mpc h^{-1}. Left and right panels are as in the previous figure. The Vela supercluster is near the ZOA (which is at SGY =0 vertical). The position of Vela from Kraan-Korteweg et al. (2017) is a green square. And the position of Vela as a knot of the V-web (Courtois et al. 2019) is a red triangle.

can be used to make an i (I) magnitude TFR. These would require calibrations before they could be used to investigate cosmic flows. By calibrations we mean the slope of the TFR and any non-linearity. The zeropoint affects Hubble constant determinations, but not peculiar velocities.

(v) A number of optical non-detections have H I properties similar in hydrogen mass to luminosity ratios seen in one or two extreme objects in the Local Volume H I Survey of Koribalski (2018). These number ∼0.3 per cent of the H I detections in the NGC 5044 field. Confirmation of these objects is required.

(vi) Forecasts for constraints from the full WALLABY survey on the growth rate of structure at the current epoch and for the measurement of large scale flows seem sound based on the pilot survey.

(vii) Addition of WALLABY galaxies to CosmicFlows4 increases the spatial resolution of the flow field because the higher sampling density affords more detail in the reconstruction.

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DATA AVAILABILITY

When released, 21 cm profiles in this paper will be curated by the CSIRO ASKAP Science Data Archive. These profiles can be viewed at https://github.com/jrmould/wallaby-HI-profiles.

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APPENDIX A: APPENDIX

A1 SoFiA velocity widths

In addition to the velocity widths we have measured and presented in Table 3, the SoFiA pipeline for WALLABY provides Wm50,[9] and the relation between the two is shown in Fig. A1. Both are H I profile widths at 50 per cent, but there is a systematic difference which is mostly unrelated to signal-to-noise. Both velocity widths are from velocities on the optical convention. A linear fit has a slope of 0.92 and a χ^2 of 1.3. In other words, the scatter is close to that expected on the grounds of measurement errors, but the non-unity slope is a quantity to be noted for investigations that require a calibrated TFR. The mean difference W50 – Wm50 is -7.7 ± 0.7 km s^{-1} with no significant difference in the mean between the high and lower SNR data. We use our measured W50s in this paper, because measurement errors are computed. Not so for Wm50.

The Wm50 measurements are made by interpolating the WALLABY spectrum at 50 per cent of the peak flux. This is automated. The w50 values, on the other hand, are measured by isolating the region of the spectrum where the galaxy flux is by setting a cursor. Based on the signal to noise a level of smoothing is chosen (2, 4, 8 pixels), and the smoothed spectrum is then interpolated similarly. The conversion of w50 to Wmx takes account of the broadening introduced by this smoothing. For the full WALLABY survey it may be necessary to adopt the Wm50 approach. But it will be important to include uncertainty calculation in the process.

A2 Alternative axial ratios

In Section 3.2 we compared IRAF measurements of axial ratios on *g* band DECaLS images with kinematic inclinations. The comparison showed considerable scatter. Other sources of inclinations are worthy of consideration and we show them in Fig. A2. The measurement of *WISE* total magnitudes also produces axial ratios and these are shown in red in the figure. They are biased towards higher inclinations than the kinematic inclinations. We also wrote an ellipse fitting program on a different principle from that of the IRAF task aiming at the 25th *g* magnitude isophote. Minimization of the deviation from an ellipse with (a, b, & PA) as the parameters of the isophotal pixels yields the solid black symbols with error bars in Fig. A2. The horizontal axis errors derive from the covariance matrix of the fit. They seem unrealistically small, but, while some inclined TFR galaxies are well fitted by ellipses in the outer disc, others are more irregular in their stellar light distribution, a problem acknowledged in the original

[9]This is distinct from w50 in the WALLABY catalogue.

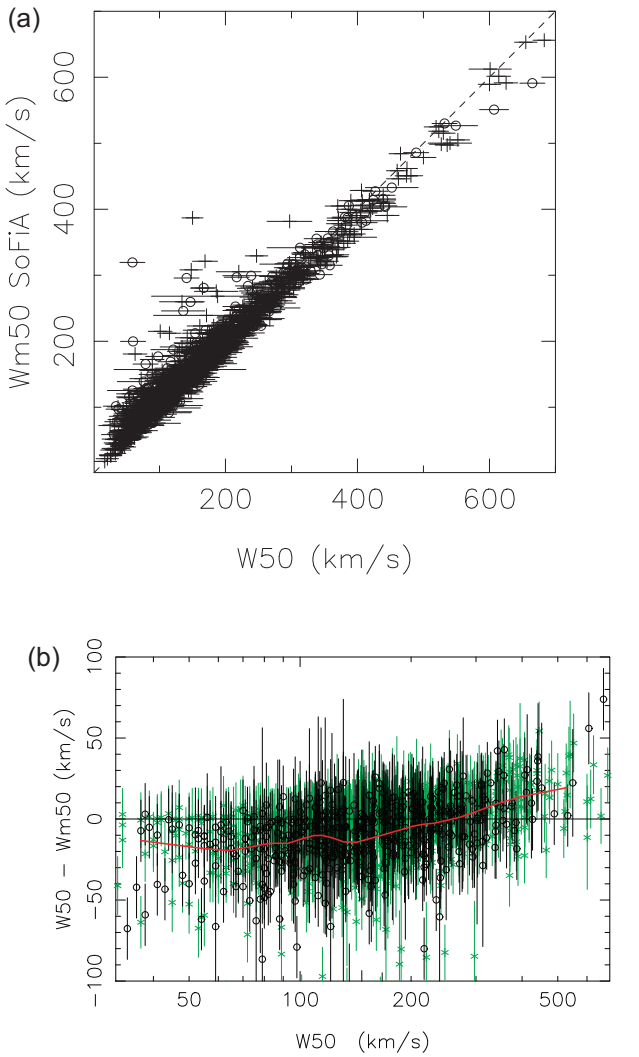

Figure A1. Comparison of SoFiA Wm50s with those in Table 3 for the NGC 5044 field. Crosses are for S/N > 3, open circles for S/N < 3. The figure below shows the differences, with the higher S/N in green. The red wiggly line is a running mean.

TFR paper (Tully & Fisher 1977). These inclinations are also biased towards higher inclinations, which the IRAF inclinations (Fig. 13) are not.

The SoFiA source finding algorithm also provides estimates of a and b for the neutral hydrogen. Inclinations from this axial ratio are plotted in blue, the solid symbols for the raw b/a, the open symbols for the same galaxies after subtracting 5 pixels in quadrature to allow for the WALLABY beam size. The raw values are biased, but the open ones, which are not biased, have more scatter. The sample with kinematic models is still small and will remain only a subset of WALLABY TFR galaxies. However, it is possible that bias in the raw hydrogen axial ratios can be calibrated out, when more data are available. This might be the path to dispensing with troublesome optical inclinations.

Finally, the stack of galaxies in Fig. A2 at 90 deg axial ratio inclinations is due to galaxies being measured with b/a < 0.2. This choice of minimum axial ratio should be revised when more data are obtained. For the time being we note that –8.7 log sin 80 deg = 0.06 mag, a small correction.

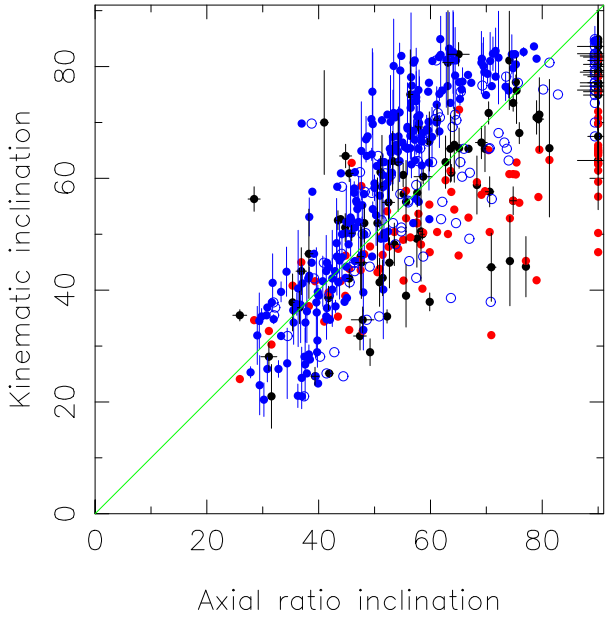

Figure A2. Alternative sources of disc inclination. Solid black symbols are from ellipse fitting to *g* band with experimental software; the red symbols are from *WISE* W1 axial ratios; the blue symbols are from resolved WALLABY hydrogen maps (open, with beam size correction), (solid, without). All these are plotted against kinematic inclinations by Deg et al. (2022). Pilot survey phase 1 data have been included in the solid blue category to more fully populate the graph, and these have error bars to distinguish them.

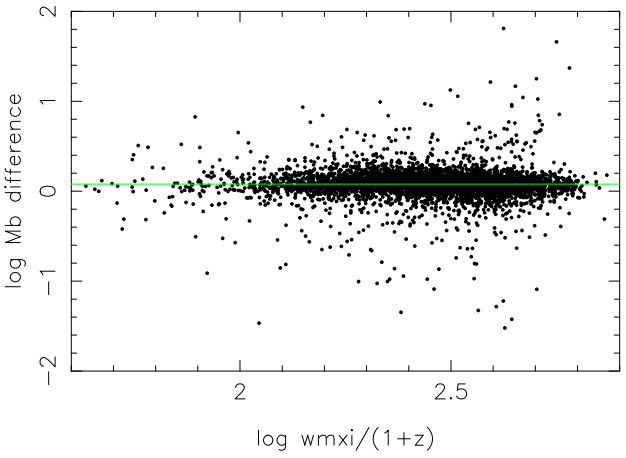

Figure A3. Difference in baryonic mass calculated with W1 magnitudes only and with the multiwavelength photometry of Kourkchi et al. (2022).

A3 CosmicFlows4 distances

The positions of WALLABY galaxies within the Cosmic Web can be studied using the full matter (dark and luminous) density contrast field (usually denoted δ) reconstructed from the CosmicFlows- 4 Catalogue of peculiar velocities (Tully et al. 2023, Courtois et al. 2023). This catalogue now uses the Baryonic TFR (Kourkchi et al. 2022) to calculate distances, and stellar masses are obtained from multiwavelength photometry. Our WALLABY galaxies have W1 photometry, although within the decade multiwavelength galaxy photometry may be supplied by the Rubin Telescope. For the 10 000 CF4 galaxies we have compared baryonic masses calculated with stellar masses from W1 as in Section 2.4 with those published in

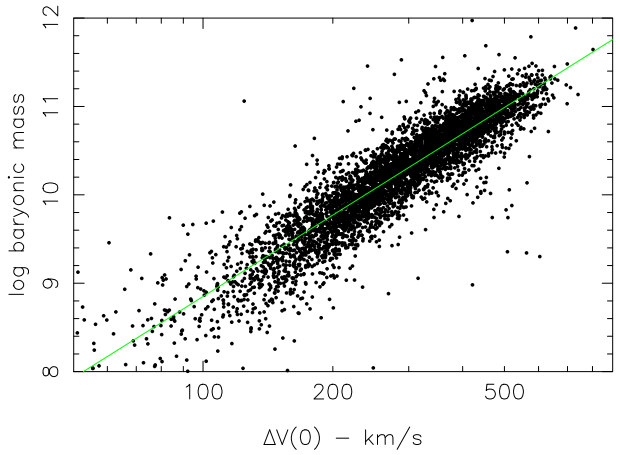

Figure A4. The calibration used in Section 5.3 for the baryonic TFR, based on the CF4 galaxies of Kourkchi et al. (2022).

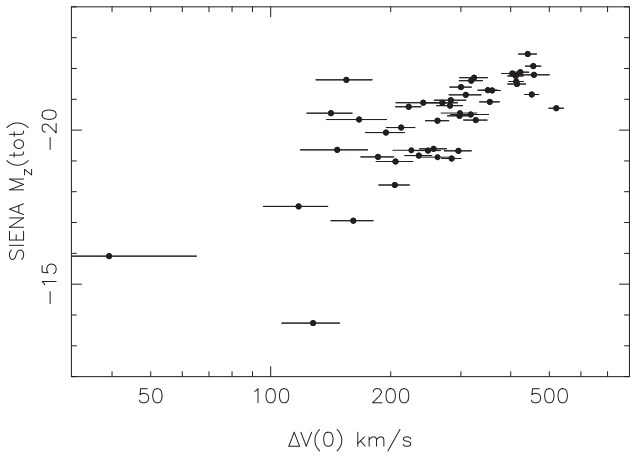

Figure A5. The TFR for the NGC4808 field from Siena catalogue z band photometry. These magnitudes are on the AB system.

CF4. The result is in Fig. A3, after a correction of 0.525 mag to the W1 magnitudes of Kourkchi et al., which are from a different source from the W1 total magnitudes used here and in Paper 1. This allows us to use a baryonic TFR calibration relation from the adjusted CF4 galaxies, shown in Fig. A4. To be incorporated into CosmicFlows4, the distance moduli obtained with this calibration also needed a 0.15 mag change for the Hubble constant used in this paper and that calculated from the CF4 data base.

A4 Siena catalogue TFR for the NGC4808 field

The Siena catalogue (Moustakas et al. 2023) has photometry in the grz bandpasses for bright galaxies over half the sky and aspires to complete sky coverage outside the Galactic plane. These total magnitudes are measured by exponential disc fitting which also produces axial ratios. We show the TFR in the NGC 4808 field for z magnitudes and Siena axial ratios in Fig. A5. The normal cut is applied to inclinations, but no S/N cut is made. This is a promising new resource for the WALLABY project.

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