

## No. 170: Behlen Shed

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<b>Address</b>	Brooklyn Road, Melton South (on the railway reserve, part of 2-98 Staughton Street)
<b>Significance</b>	Local
<b>Construction Dates</b>	Mid-1960s
<b>Period</b>	Post WWII
<b>Date Inspected</b>	6 February 2018



### Statement of Significance

#### What is Significant?

The mid-20th century prefabricated frameless steel shed, known as a Behlen Shed.

The Behlen Shed is a prefabricated frameless steel structure, originally used as a grain shed/silo, with a distinct profile that allows a clear open span internally. The location of the original distribution auger/elevator is evident to the north (road) side as is another chute on the south (track) side. The format of the shed is windowless with three doorways on the track side. After it ceased being employed for grain or chaff, a large doorway was introduced to both short elevations.

#### How is it Significant?

The Behlen Shed is of local historical and aesthetic significance to the City of Melton.

#### Why is it Significant?

Historically the Behlen Shed is significant as reflecting the extent of facilities required to support the chaff and grain industry in the municipality but particularly in the Melton South area, where the quality of the local grain and chaff was long recognised. It was erected during the mid-1960s for the Grain Elevator Board and was probably built as a storage shed initially with the elevator (distribution auger) and chute added by 1970. Due to the loss of the two nearby chaff mills to fire (in 1977 and 1987), the Behlen Shed is a potent reminder of the chaff mill and associated industry in the municipality generally but especially in the Melton South area where it was a major industry. (Criterion A)

The Behlen Shed is aesthetically significant as an imported prefabricated structure utilising the frameless Dubl-Panl system developed by the Behlen Manufacturing Company of Nebraska, USA. It was one of probably only 13 employed by the Grain Elevators Board of Victoria. The structure is frameless, has a distinct undulating profile, consisting of a variety of secondary corrugations, etc. imprinted in the sheets, which provides its inherent strength. (Criterion E).

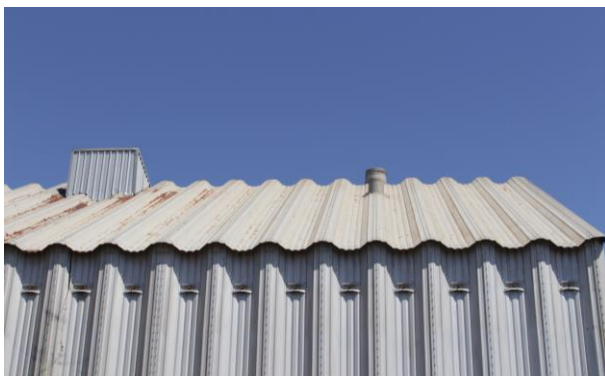
## Description

The large structure is located in a fenced enclosure along Brooklyn Road in the northern part of the railway reserve associated with the Melton railway station (and to the north-west of the latter). It is set back about 20 metres from the footpath.

It is an imported prefabricated structure utilising the frameless Dubl-Panl system from the Behlen Manufacturing Company, which was established in Nebraska, USA. A light gauge steel was employed in which double corrugations and a great corrugation depth were made.<sup>1</sup> They had a standard footprint of 25.9 by 16.8 metres, a wall height of 7.6 metres, and a capacity of 2700 tonnes.<sup>2</sup>

The shed/silo has a gable roof form with four flues (two large near the ridge, and two lower) and a chute to the northern side, which originally accommodated an elevator for depositing of the chaff, etc. The chute is now clad in different sheeting.

Initially there was also an elevator located on the south side, for loading onto trains. Its location is evident as a square rusted edged opening high on the wall.



North side, loading chute at roof ridge



South wall, location of elevator to track

Unusually there is no clear ridge flashing. There is a limited overhang of the roof cladding and no guttering. Rust is evident to the roof in patches, more so below the central chute, and the lower edge.



Gable end with vent and band of tie plates below



Undulating profile of cladding. Strengthening point with two rows of rivets (indicated).

<sup>1</sup> US Patent 3,059,685 (column 1)

<sup>2</sup> *Grain Elevators Board of Victoria*, 1980 (?), np [held at the SLV]. Of the 13 sheds identified in the circa 1980 report, 12 had a capacity of 2700 tonnes and 1 had a capacity of 900 tonnes (Bealiba).

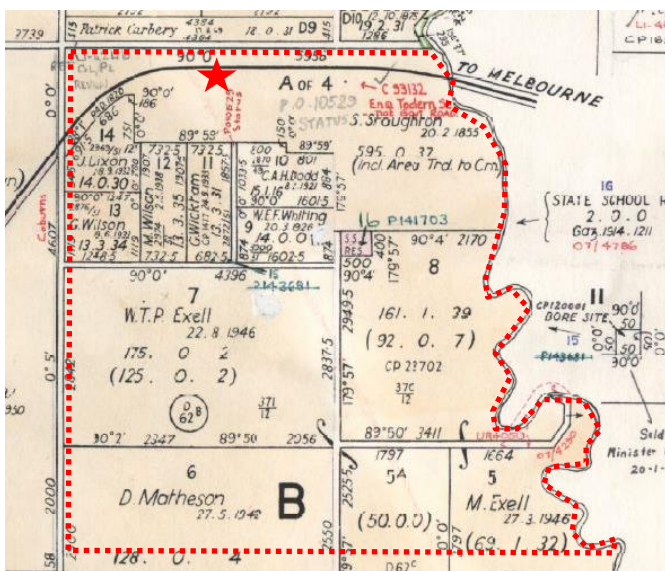
Both the roof and walls are clad in distinctive metal sheeting with a wave-like profile. Each panel is about 1 metre wide and the detail of the undulating profile varies between the raised ends and the central trough. The outer sections (2 parts wide) are relatively straight with a triangular rise between them, whereas the central three sections are narrower and have a shallow convex profile.

The panels are riveted along a raised end strip, which is located to the centre of the raised end. The panels are however strengthened at two intermediate points with a double strip of rivets. This probably relates to a wider internal member. Along each elevation, there were presumably two rows of tie plates, though the lower row has been removed.

To the middle of the short elevations (west and east) there is a large opening with roller doors and a vent above. There are three doorways to the south elevation with narrow canopies, in a symmetrical configuration.

## History

The subject site was part of Crown Portion A, Section 4, Parish of Djerriwarrah which was granted to Simon Staughton on 20 February 1855. The land holdings initially consisted of 595 acres and 37 perches (about 241 hectares).<sup>3</sup> Staughton, an early English settler in the Melton area, procured extensive holdings in the vicinity. In 1842, he took over the squatting run known as Brisbane Ranges and Exford and established the homestead, Exford.<sup>4</sup>



Djerriwarrah Parish Plan, D62(4). Allotment A indicated (dashed line) and approximate location of the subject site (star)  
(Source: PROV)

Land had been set aside in 1868 for the Melbourne to Ballarat Railway,<sup>5</sup> though it was not completed for another 21 years. The location of the original reserve may not be the same as the existing. It is known that there was a local deputation to the Railway Department about a proposal to locate the station closer to Melton.<sup>6</sup> The Melton station, later South Melton, was officially opened on 2 April 1884, and the line reached Ballarat in 1889.<sup>7</sup> Prior to this time, Ballarat could be accessed by taking a circuitous train journey via Geelong - the Melbourne to Geelong railway, was completed in 1859, and the Geelong to Ballarat trunk line opened in 1862.<sup>8</sup>

The establishment of Melton South, formerly Melton Railway Station and Exford, was driven by the opening of the railway station. Initially development was limited to a few industries (saw mills then chaff mills)<sup>9</sup> which took advantage of the access to the

<sup>3</sup> Parish Plan, Djerriwarrah (D60) and D62(4), Parish Plan Schedule 2972, p2

<sup>4</sup> Joan Starr, *Melton Plains of Promise*, Melton 1985, p52

<sup>5</sup> *Victoria Government Gazette*, 1 Dec 1868, p2297. The contract was with T Wright

<sup>6</sup> *Bacchus Marsh Express*, 18 December 1880, p2

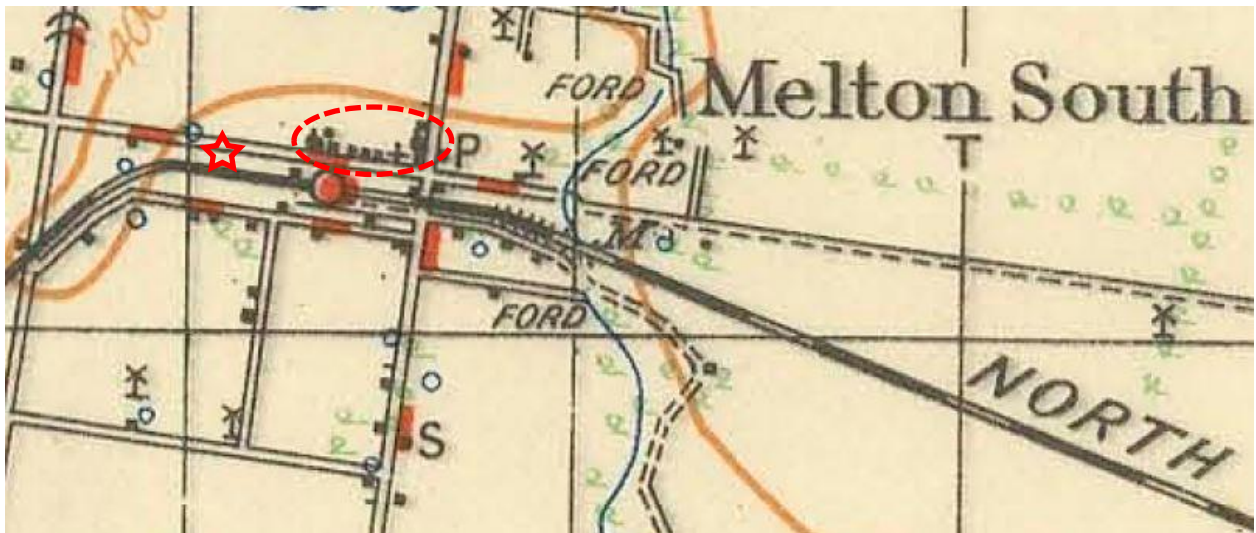
<sup>7</sup> D Moloney, *Shire of Melton Heritage Study Stage Two, 2006: Environmental History*, pp117-118

<sup>8</sup> Leo J Harrigan, *Victorian Railways to '62*, pp37, 82

<sup>9</sup> D Moloney, *Shire of Melton Heritage Study Stage Two, 2006: Environmental History*, p87

Melbourne markets, etc. Likewise, the station supported the local dairying industry, which began to prosper with the government subsidies and technological advancements that occurred at the end of the 19<sup>th</sup> century including refrigeration (allowing for access to international markets) and centrifugal cream separation (allowing cream to be separated at the farm).<sup>10</sup> To that end, a contract was accepted for a cool storage shed to be erected in the railway reserve in early 1890, costing about £351.<sup>11</sup>

By 1916, a few buildings, including two chaff mills, had been erected along the north side of Brooklyn Road, near the corner of Station Road.<sup>12</sup> During the Interwar period (the 1920s and 1930s) some subdivision, into parcels of about 13 acres, was undertaken south of the railway.<sup>13</sup> By 1938, some buildings had been constructed in the area south of the railway line (e.g. in Cooper and Staughton streets), a few within the railway reserve (though not in the vicinity of the extant Behlen Shed) and a few more along the north side of Brooklyn Road.<sup>14</sup>



1938 plan, showing approximate the limited development at Melton South.

Approximate location of the extant Behlen Shed (star) and nearby chaff mills on Brooklyn and Station roads (oblong)

(Source: SLV)

A 1957 aerial shows that there was limited development in the vicinity of the station at that time with the largest buildings being the chaff mills on the north side. Within the railway reserve, there were areas with well-established trees, a few buildings, and a structure located immediately to the east of where the existing shed/silo is now located.<sup>15</sup> Another early aerial, taken around this time, is clearer and shows that the structure was actually a fenced enclosure, probably a stock yard with a tree in one section.<sup>16</sup> The enclosure was retained for a few years after the Behlen shed was erected.

Prior to the extant building being erected, it has been reported that there had been a basic storage shed/facility for the bagged grain with a skillion roof for the barley stacks in this part of the railway reserve.<sup>17</sup> The structure was said to be a metre high and open on the sides, which tended to be enclosed in hessian. During the mice plague of the late 1940s, it apparently collapsed due to the infestation.<sup>18</sup>

<sup>10</sup> D Moloney, *Shire of Melton Heritage Study Stage Two, 2006: Environmental History*, p61

<sup>11</sup> *Victoria Government Gazette*, 7 March 1890, p985

<sup>12</sup> Commonwealth Section, Imperial General Staff, 'Victoria, Sunbury' [cartographic material], 1916

<sup>13</sup> Parish Plan, Djerrivarrah D62(4)

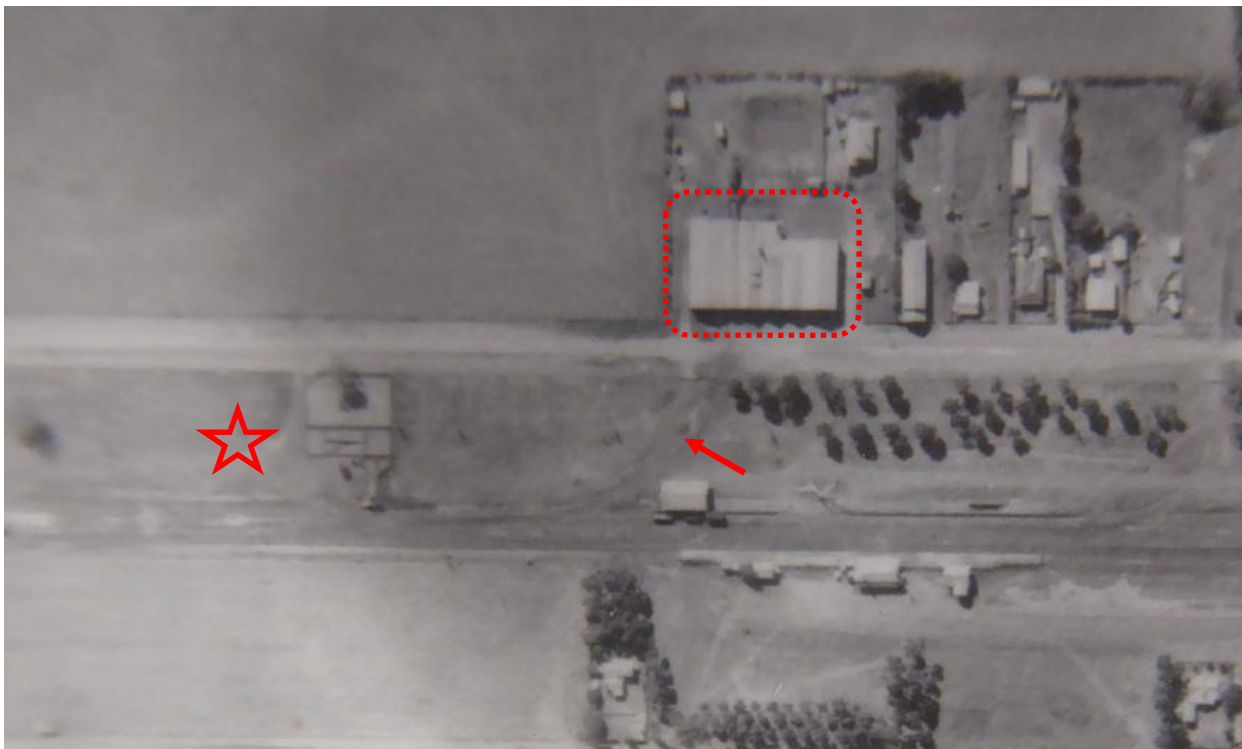
<sup>14</sup> Australian Section, Imperial General Staff, 'Victoria, Sunbury' [cartographic material], 1938.

<sup>15</sup> SUNBURYC3/838C3 Photo-map aerial, Adastral Airways, Dept of Lands and Survey, 27.3.1957

<sup>16</sup> Some limited details on photograph: 715-65, Sunbury Run 10A

<sup>17</sup> Conversation with Bernie Trethowan, 10 May 2018

<sup>18</sup> Conversation with Ian Jenkin, Vice-President of the Australian Railway Historical Society, Victorian Division – 17 May 2018



Circa 1957 aerial  
 Approximate location of subject site highlighted (star). Stock yards immediately to the east.  
 Chaff mill (dashed) and siding is discernible (arrow)  
 (Source: City of Melton)

### Existing Building

The Behlen Shed was erected for the Grain Elevators Board of Victoria probably during the 1960s as it is evident on an aerial photograph of that period.<sup>19</sup> The Grain Elevators Board was established with the Grain Elevators Act 1934 (no. 4269). The Board was responsible for all activities connected with the storage of grain, including weighing, the issuing of warrants or receipts for grain delivered, supply management, quality control, pest control, and data collection. The Board was established as a result of the recommendations of a government review undertaken in 1933 regarding '... the economical and efficient receipt, storage and transportation of grains in Victoria.'<sup>20</sup> Grain was originally bagged for transportation but this approach was assessed as being extremely inefficient by the government review.<sup>21</sup>

The Behlen Shed was one of a wide range of storage types utilised by the Board, though the Behlen type represented a small portion of their total facilities (in c.1980 there were 673 facilities). At this time, 13 Behlen sheds were noted by the Board, which probably represented the total number that were imported into Victoria.<sup>22</sup> It is not known how many survive but a shed at Gymbowen (the Wimmera) was recently noted as part of a sale of the former grain storage facility.<sup>23</sup> From a recent aerial, a smaller example at Bealiba (also the Wimmera) also survives. It is understood that the Behlen sheds were among the last above ground storage facilities constructed prior to the centralisation of storage facilities and the use of excavated plastic lined pits to hold grain.<sup>24</sup>

<sup>19</sup> Melton Project, Run 4, 1343-41, 1960s. The streets to north (Hazel Street, Myrtle Street, Kurrajong Crescent, etc.) had been laid out but no houses had been constructed as yet.

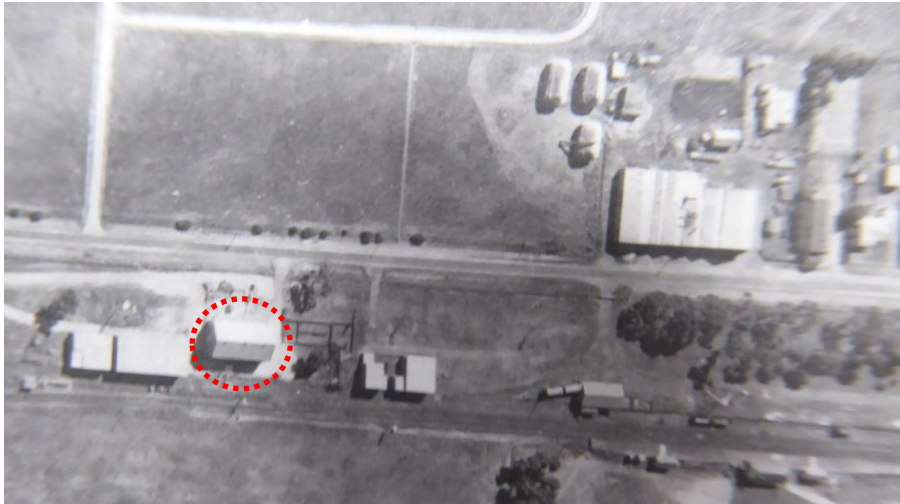
<sup>20</sup> PROV, Description of Grain Elevators Board (Agency 1057)

<sup>21</sup> Railpage – Grain silos forum <https://www.railpage.com.au/f-p1372901.htm>, accessed 4 June 2018

<sup>22</sup> *Grain Elevators Board of Victoria*, 1980 (?), np

<sup>23</sup> <http://www.graincorp.com.au/site-sales/vic>, accessed 4 June 2018

<sup>24</sup> Information provided by Ian Jenkin, Vice-President of the Australian Railway Historical Society, Victorian Division – 17 May 2018

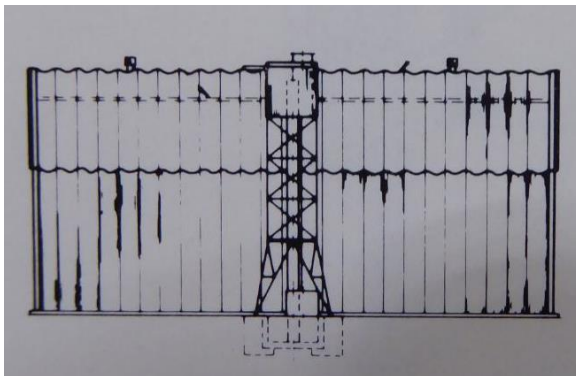


1960s aerial, Behlen Shed highlighted

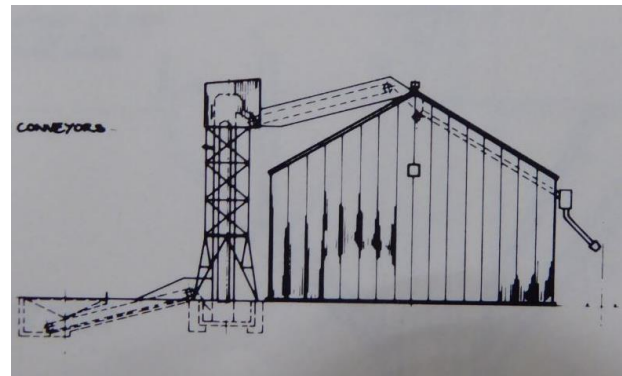
The three flues to the ridge are evident but not the chute nor the elevator/auger. NB other sheds adjacent (Source: City of Melton)

Initially (according to the 1960s aerial), there was no equipment either side of the shed (auger or chute). An earlier fenced enclosure stood immediately to the east. Nearby were two smaller sheds and two large flat roof sheds to west.

It is not clear if wheat or other grain was primarily stored in the shed - this may have varied over time. It has been suggested that it was a grain silo for oats or barley.<sup>25</sup>



Typical Behlen Shed, long elevation with distribution auger (Source: Grain Elevators Board of Victoria, 1980?, np)



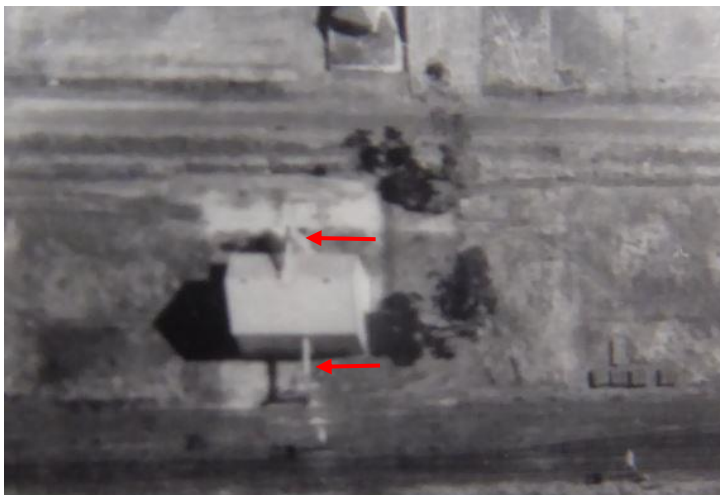
Typical Behlen Shed, short elevation (Source: Grain Elevators Board of Victoria, 1980?, np)

By early 1970, an elevator/auger had been added to the north (road) side and a chute or the like to the south (track) side. The sheds to the east and west sides had been removed by this time.<sup>26</sup> The elevator and chute are more clearly visible on a late 1974 aerial photograph.<sup>27</sup> The term auger, in relation to the grain elevators, describes a spiral drill acting as an Archimedes screw to lift the grain.

<sup>25</sup> Railpage – Grain silos forum <https://www.railpage.com.au/f-p1372901.htm>, accessed 4 June 2018

<sup>26</sup> 15.1.1970. Dept of Crown Lands and Survey, further details missing.

<sup>27</sup> 22.12.1974, Dept of Crown Lands and Survey, Melbourne Project No. 1148, Run 32. Suburban development was underway in the streets to north of the station.



1974 aerial

An elevator is visible to north and south sides of the Behlen Shed  
(Source: City of Melton)

It was reported that by about the early 1980s, a person by the name of Wilmont (whose brother owned Golden Fleece petrol station in Melton) took over the lease. He made changes, such as introducing the doors and fence, and he also tried to buy the land from the railways but was not able to do so. Eventually, he walked away from the site. Subsequently it was used by a local church for storing furniture etc. Around 2000, Bernie Trethowan took on a lease and operated a produce store there for about 15 years. Trethowan had previously operated a small produce store on the Trethowan chaff mill site on the opposite side of Brooklyn Road, prior to it burning down in 1987. After the fire, he developed this side of the business.<sup>28</sup>

### Chaff Industry

Melton gained the reputation for producing high quality hay from the 1880s. Initially little was grown, as it was thought that the average rainfall would be too low to sustain cropping. However during the early 1880s, the Robinson brothers experimented at Werribee and quickly were able to increase the harvested crop.<sup>29</sup>

Initially mobile mills operated in the area but two permanent chaff mills were established near the station, whose ownership changed regularly after the turn of the century. At their peak, they employed about 30 men.<sup>30</sup>

The first chaff mill at Melton South was established by the Barrie brothers in 1902, who had previously operated a mobile chaff mill. In 1908, they relocated their operations to Rockbank, returning to Melton South a few years later. The mill was taken over by Ward & McKenzie in about 1916 but destroyed by fire in 1920. Subsequently it was rebuilt but lost to fire again in 1977. This mill was located in Brooklyn Road at the corner of Station Road.<sup>31</sup>

The second mill at Melton South was operating by about 1910, probably for the Dixon brothers, who operated other chaff mills in Victoria.<sup>32</sup> By 1917, a railway siding had been connected to this chaff mill.<sup>33</sup> In 1924, the Dixon brothers siding was however renamed the Ebbott Kebby siding.<sup>34</sup> Ebbott Kebby was established in July 1923 as a firm of grain merchants, millers, chaffcutters, butchers, etc. In 1939, they converted most of the equipment from steam to electric powered. In the following year, the Robinson brothers took over the site after their mill in Diggers Rest burnt down the year before. The Robinsons operated the mill for ten years before it was taken over by B J Trethowan and Jack Butler.<sup>35</sup> In May 1951, the siding transferred to Butler &

<sup>28</sup> Conversation with Bernie Trethowan, 10 May 2018

<sup>29</sup> 'Historic Melton', *Sunshine Advocate*, 13 March 1926, p6

<sup>30</sup> David Moloney, *Shire of Melton Heritage Study - Environmental History*, 2007, p128

<sup>31</sup> D Moloney, *Shire of Melton Heritage Study - Environmental History*, 2007, p128; J Starr, *Melton Plains of Promise*, p216, image of Barrie's mill

<sup>32</sup> Gary Vines, *Chaff-Mills in Melbourne's West: An Industrial Sites Study*, 1987, p37

<sup>33</sup> G Vines, *Chaff-Mills in Melbourne's West - An Industrial Sites Study*, appendix A

<sup>34</sup> Andrew Waugh, *Melton (Victorian Signalling Histories no. 84)*, 2005, np (vrhistory.com)

<sup>35</sup> G Vines, *Chaff-Mills in Melbourne's West: An Industrial Sites Study*, pp40-41

Trethowan, and then in December that year was transferred to Wright, Stephenson & Co.<sup>36</sup> This transfer was the result of Jack Butler (who had provided the finance) selling to Wright Stephenson, however B J Trethowan continued as the manager of the chaff mill. Subsequently, the B J Trethowan's son Joseph purchased the mill in 1962 so that it became J V (Joseph Victor) Trethowan & Son, before again changing to B (Bernie) J Trethowan & Co in 1967.<sup>37</sup> In 1984, the B J Trethowan & Co siding was dismantled.<sup>38</sup> The mill burnt down in 1987 but a produce store continued to operate at the subject site. In the Local Directory, B J Trethowan was listed at 42 Brooklyn Road, Melton South as recently as 2016-17, having been continuously listed in a similar manner since 1977-78.

Over the years, the type of grain grown in the Melton area has varied. Hay and chaff cutting was encouraged during the early 20<sup>th</sup> century with the breakup of the larger estates in the vicinity such as the Staughton's Exford estate, which promoted the chaff industry at Melton South. The industry is said to have peaked in the lead up to WWII. Subsequently, grain came to replace hay as the major crop due to the rise of the automobile replacing horse-drawn vehicles. Straw also became less commonly used for packing. The greater labour requirements for harvesting hay also resulted in more grains being grown. The construction of bulk storage facilities has however been said to have been the main reason for the switch to grain and the main reason for the demise of the chaff mills. The Trethowans however managed to maintain a trade in chaff and continued to operate in part due to the rise of the local thoroughbred industry. They also diversified into a produce store.<sup>39</sup> A 1973 advertisement of B J Trethowan & Co. described themselves as 'suppliers of bundled hay, lucerne chaff, oats and straw'.<sup>40</sup>

### Behlen Manufacturing Company

The Behlen Manufacturing Company was founded in 1936 by Walter D Behlen in Columbus, Nebraska. Beginning in his own garage, he had his first success with the design of steel caps for wooden soled shoes used by car factory works. Subsequently his designs included farming implements and as his business expanded he required larger premises. In 1950, he developed a honeycomb building from rolled steel panels that did not require internal framing, which became known as the Dubl-Panl system. An early demonstration of the system's inherent strength involved the suspension of several tractors from the ridge of a large building (over 3700 square metres). The Dubl-Panl system gained recognition when two sheds constructed from it survived a government atomic test in Nevada during May 1955.<sup>41</sup> The patent for the 'Corrugated Panel Making Machine and Method' was approved in 1962, having been submitted five years earlier.<sup>42</sup>

### Thematic Context / Comparative Analysis

*City of Melton Historical Themes:*

Other Industries – Chaff Mills

*Known comparable places in the City of Melton*

Historically, this is one of a few grain storage facilities or silos in the municipality. Concrete silos survive at:

- HO1 – 'Eynesbury' Homestead & Station, Eynesbury Road, Eynesbury (Place no. 281): Two concrete silos dating to c.1930s.
- HO99 - 'Warrawong' Shearing Shed, 1182-1250 Exford Road, Eynesbury (Place no. 272): Three concrete silos adjacent to the shearing shed built during the mid/late 20<sup>th</sup> century.

A few other sites associated with the chaff industry also survive (though generally in an ancillary way):

- The road weighbridge in Melton nearby (in Brooklyn Road?) provides some link with the hay and grain industries.
- The houses, or related items, of some of the main families involved in the chaff industry survive:
  - House – Creighton, 1618 Gisborne-Melton Road, Melton. Built c1895 for the Robinson family who owned chaff mills at Diggers Rest (1926-1939) then Melton South (1940-c1950).

<sup>36</sup> A Waugh, Melton (Victorian Signalling Histories no. 84), 2005, np (vrhistory.com)

<sup>37</sup> G Vines, *Chaff-Mills in Melbourne's West: An Industrial Sites Study*, p41

<sup>38</sup> A Waugh, Melton (Victorian Signalling Histories no. 84), 2005, np (vrhistory.com)

<sup>39</sup> G Vines, *Chaff-Mills in Melbourne's West: An Industrial Sites Study*, pp22-24. During the mid to late 20<sup>th</sup> century, if a fire claimed a chaff mill, as they frequently did, due to the depressed market, it was financially unviable to rebuild.

<sup>40</sup> G Vines, *Chaff-Mills in Melbourne's West: An Industrial Sites Study*, p26

<sup>41</sup> Behlen Building, <https://thomasinnebraska.wordpress.com/2013/03/15/behlen-building/> (accessed 4 June 2018). The company became a subsidiary of the Wickes Corporation.

<sup>42</sup> US Patent 3,059,685



- Former Robinson House Tank, 122-142 The Bullock Track, Melton (HO95)
- House – 2 Exford Road, Melton South (HO72) – built at Diggers Rest probably for Robinsons in 1929-30 but moved to its current location when they took over a chaff mill at Melton South.
- Darlingsford Barn – 13-15 Darlingsford Boulevard, Melton (HO70). At one stage owned by C E Barrie, prominent in the local chaff industry.

The only other large steel clad shed in the municipality is the:

- Former Army Radio Station at Diggers Rest (HO49), erected in 1944 and which may be an Armco hut manufactured in Australia during WWII.

**Condition**

Fair to good (though inspected from boundary only).  
There is some rusting to the roof sheeting.

**Integrity**

Largely intact with the primary change being that doors have been introduced to both short elevations.

**Previous Assessment**

The site was first identified as being of potential heritage significance in Stage One of the *Shire of Melton Heritage Study, 2002*. It was then identified as 'Melton Produce' (Trethowan's) grain store, former silo.<sup>43</sup> In the final report, the site was included in Appendix B as a 'place that might be considered worthy of heritage protection in a future study'. It was one of 22 such places.

**Heritage Overlay Schedule Controls**

External Paint Controls	No
Internal Alteration Controls	No
Tree Controls	No
Outbuildings and/or Fences	No

**Extent of Heritage Overlay**

The proposed extent of the heritage overlay would be the current fence enclosure associated with the Behlen shed.



Recommended extent of Heritage Overlay  
(Source: Nearmap 21 April 2018)

<sup>43</sup> David Moloney, *Shire of Melton Heritage Study Stage One 2002: Places of Potential Heritage Significance*, p58