



revitalising industrial sites

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On trails of the past



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PREFACE

'Hengelo does not seem to have much cultural heritage. Fortunately, interest in this subject has increased considerably. In the past many buildings in Hengelo that could have been preserved and taken on a different role were demolished. The old town hall is a typical example. By today's standards it would never have been demolished.

The second world war also had an impact on our municipal heritage. Almost the entire inner city centre was flattened during bombardments. Most of what was left behind was later replaced, so that we are left with very little. We should cherish what remains. This realisation has firmly taken hold during the past decades, no less because of the efforts made by the Oald Hengel Foundation and Monument Commission.

In order to maintain one's industrial heritage it needs to be allocated a specific function. Mere preservation does not work. It is too expensive. In view of the above we arranged an inventory of the industrial legacy at the Stork and Dijkers sites. The 'Hart van Zuid' Master Plan has already provided an initial idea of how the sites might be reused. It was an inspiring concept.

Now that the inventory is available in book form, the question is which buildings should be preserved at all cost and which function they should have. We need to look at this with a critical eye. For instance the quarter round Stork building near the station, which defines the appearance of the city. It really is part of Hengelo. Many inhabitants of the city would be very upset were we to demolish it. The problem, however, lies in the fact that it used to be a warehouse and is, therefore, not suitable for residential use. We could, however, strip the interior of the building and maintain the facade. It could then be used for a different purpose.

Stripping buildings and allocating new functions is one way of reusing industrial legacies. Another method is based on maintaining historic lines, sometimes literally when it involves the rail line that ran through the area. In some cases only the facades and structures can be kept, as it is not viable to maintain every building in its original condition.

In my opinion the main thing is that the industrial atmosphere and character of the 'Hart van Zuid' site should still be tangible after redevelopment. After all that is what Hengelo owes its existence to. We should be able to sense and see that many generations have worked hard in this area. It is part of our city.

This book aims to create an awareness of the value of Hengelo's industrial legacy. It shows what is available, as not everyone is aware of this. Together with the city we will discuss what to do with this legacy. We will explain what we intend to demolish and why, and not the other way around. The onus of proof lies with us.'

Hans Kok, chairman of the commission for environmental planning, traffic and transport, economic affairs of the community of Hengelo.

INTRODUCTION

Charles Theodoor Stork can rightfully be referred to as the founder of the industrial city of Hengelo. In 1867 the pioneering entrepreneur set up an engineering factory that would not only grow into a major empire, but would also have a major impact on the environmental and social structure of Hengelo. In addition to providing employment, Gebr. Stork en Co. also defined the living conditions of their factory workers when they built the 't Lansink Garden Village. Their 'Vereenigingsgebouw' (Association Building) was the starting point in Hengelo's cultural life. Personnel received in-house training at the Wilhelmina school. Stork also took on a pioneering role with respect to social security provisions.

In a nutshell, Stork is firmly rooted in Hengelo and the 'Hart van Zuid' site. From a technical/architectural point of view the cultural/historic factor is more important than it initially appears. This insight is reason enough to make the influential significance of Stork the theme of the restructuring of former factory sites. This basic concept will appear not only in the programme to be defined, but also in the planning process and way in which the area will be redeveloped.

The 'Hart van Zuid' Master plan, which was presented in the spring of 2001, is based on a staged transformation that will take place over a number of years. During that time the Stork and Dijkers site, which covers an area of approx. 50 hectares, will be transformed from a mono-functional, industrial complex into a multi-functional part of the city. An innovative and open minded vision on the reuse of the huge industrial heritage site should be part of this.

Reuse is a definite option according to Dr. A.L.L.M. Asselbergs, director of the 'Rijksdienst voor de Monumentenzorg' (National Trust). 'Over the years we have come to value our tumultuous and sometimes frustrating industrial past. The general public is now just as interested in industrial and technological monuments as it is in traditional monuments.' The physical effects of this increased level of interest manifest themselves in a trend away from reckless demolition, via monument preservation to dynamic transformation. Since the appearance of the IBA Emscherpark in the German Ruhrgebiet and the Westergas factory site in Amsterdam, the focus seems to be shifting from individual objects to contextual history.

Urban development strategy is increasingly focussed on the possibilities associated with reuse and the staged replacement of the old with the new. With the transformation an industrial area the size of the Stork and associated Dijkers sites, with such historical connotations for Hengelo, the skill lies in upholding the existing 'history' of the location whilst simultaneously giving it a new direction. This approach is also important because, as the years went by, the area was the subject of many changes and, strictly speaking, has few monuments. In view of the presence of a number of heavy foundations and structures in the factory complex, it would also be sensible to integrate the reuse of specific structural parts in the planning process for economic reasons.

The creation of this book started with an initial architectural inventory, one of the starting points for planning development in the 'Hart van Zuid' area. The results of the survey were received with such enthusiasm that it was decided to publish this interesting material for the benefit of a wider audience. That decision eventually led

to this book on Stork's industrial legacy in Hengelo. Its content is based on contributions from three different authors. The various angles from which reuse is considered are set out alongside each other to offer the reader a multi-faceted approach.

The development of Stork is incorporated in the overall history to highlight the group even more. The way in which the company has contributed to the urban development of Hengelo deserves that kind of attention. In years to come the historic signature of Gebr. Stork en Co. and their successors will be given a completely new significance under the name of industrial inheritance. The echo of the past will resound in the new part of the city: Hart van Zuid.

ANCHOR POINTS AND RECOMMENDATIONS FOR INDUSTRIAL LEGACIES

The reuse of industrial legacies is high on the agenda of the parties involved in the redevelopment of the Stork and Dijkers sites. The way in which, and the degree to which, the rich industrial past in Hart van Zuid is to become apparent is defined in a number of basic principles. These anchor points reflect the level of ambition amongst the cooperating parties and act as a guide to redevelopment.

1 THE ECHO OF A RICH INDUSTRIAL PAST WILL RESOUND IN THE FUTURE

The Stork and Dijkers complex in Hengelo is one of the most significant and large scale historic factory sites still in operation in the Netherlands. Nationally the area has a unique representative value. This will be expressed as follows:

- By using the cultural component to position the area.
- By integrating the characteristic legacy in the overall reorganisation.
- By anchoring the qualities in the planning and process.

2 DYNAMICS, COMPLEXITY AND TRANSFORMATION PROCESS ACT AS A GUIDE

As the site is characterised by a continual process of change, it is important not to consider reuse from the viewpoint of an assumed reconstruction of its original situation. The following rules should be taken into account when defining a strategy:

- Maintain everything that works.
- Transform only if it leads to partial and/or complete improvement.
- Flexibility and keeping options open.

3 THE STORK SITE WILL BE DEVELOPED FROM AN ISLAND TO A CITY LINK

Stork played an extremely important part, both economically and socially, in the development of Hengelo. The currently isolated and mono-functional Stork site is to be developed as a city link, both economically and with respect to its infrastructure. Additional facilities are needed to transform the area into a lively part of the city.

Important keys to this objective include:

- To avoid mono cultures; opt for a distribution and mixture of functions.
- Not to create more of the same; look for themes for programmed development.
- Search for success factors; investigate and use existing quality and identity.

4 THE ENVIRONMENTAL STRUCTURE AND CHARACTERISTICS OF THE AREA WILL BE REINFORCED

The Stork and Dijkers sites have their own structure and characteristics within the southern part of the city of Hengelo.

The layout around the rail network and the complex interrelationship between buildings are equally as characteristic as the large scale production halls.

In order to maintain and reinforce this character the following basic principles should be taken into account during redevelopment:

- Maintenance of the original scale contrast of the area and buildings.
- Maintenance of the environmental structure of the industrial roads and railway system.
- Use of the historic stratification of the various production units so that they are developed as recognisable sub areas.

5 INTEGRAL APPROACH DEFINES THE VALUE OF THE OBJECTS

A case has been made for an integral approach to reallocation, based on the idea that the complex is a coherent unit and individual parts have specific properties.

The characteristics are as follows:

- Evaluation of the technical, programme, cultural and economic value of the objects. This is followed by a definition of priorities with respect to reuse and/or demolition.
- With new construction a link will have to be made with the soberness and technical/rational architectural character of the original complex.

PART 1 CITY AND INDUSTRY DEVELOPMENT

MECHANISATION OF THE NETHERLANDS

A major revolution, i.e. the mechanisation of the Netherlands, took place in the middle of the nineteenth century. The introduction of the steam engine had a major impact on the image and culture of this country. Home based industries were replaced by factories driven by steam engines. Transport and drainage (pumping) no longer depended on wind energy.

Most new factory owners bought their machines in Belgium and England, the cradle of the industrial revolution.

Initially, because of the specific experience involved, personnel was brought in from these countries. The Netherlands were still considerably lagging behind when it came to mechanisation and machine production. This situation would remain unchanged for some time.

In 1850 the Netherlands included about ten machine factories with a total workforce of approximately one thousand people. The main factories originated in the shipping industry. Most metal workers merely repaired foreign products. Only one manufacturer got involved in the development of machines. The Nering Bögel iron foundry in Deventer and Hendrik Figuee, a manufacturer based in Haarlem, took the first tentative steps.

Dutch factories were able to compete with foreign suppliers because of the personal contact between manufacturer and client. Machines were tailor made and

required a lot of consultation. As a result the markets for most machine manufacturers were limited to their own region.

The Dutch machine industry managed to acquire a majority interest in various fields of the home market. For example around 1880 more than half the steam boilers and machines in the Netherlands were produced nationally. Progress was also made in the typically Dutch field of polder drainage.

Shipyards increasingly bought Dutch machines and, because of the construction of the Nieuwe Waterweg and Noordzeekanaal, dredging companies tended to place orders at home. Orders from abroad followed in due course.

The largest companies in the machine sector were shipyards and manufacturers of steam boilers and machines for sugar refining. The former were based in the west of the country because of the available water; which the latter were less dependent on. For many companies the market had increased because of the construction of the railway. The railways themselves also brought in orders. Railway equipment was manufactured in Amsterdam, trams were made in Breda.

The main machine manufacturers included the 'Nederlandse Fabriek van Werktuigen en Spoorwegmateriaal' (Dutch Equipment and Railway Equipment Manufacturer) in Amsterdam, Machinefabriek Breda in Breda, J.T. Nering Bögel & Co. in Deventer, Utrechtse Machinefabriek v/h E.H. Begemann in Helmond, H.K. Jonker & Sons in Amsterdam, P.M. Duyvis & Sons in Koog aan de Zaan and Gebr. Stork & Co. in Hengelo.

ELECTRICAL MOTORS

The electrical industry also took off in the eight decade of the nineteenth century. The initial factories had their own power stations. The first public electricity companies did not appear until later.

The introduction of electrical and combustion engines after 1895 resulted in an unparalleled revolution. The invention of these light, small and user friendly machines put the transition to more modern production methods within reach of an increasing group of companies.

The industry received a large number of orders, no less because of the fact that the Netherlands maintained their neutrality during the first world war. The War Ministry ordered munitions and weapons.

Growth in the machine industry continued after 1918, but the stock market crash in 1929 brought it to a halt. By 1932 production had reached its lowest point. Manufacturers were trying to find the means to oppose these problems. Increased production efficiency and productivity were key concepts. The mechanisation of the industry did continue unabatedly during this crisis period. Cooperation between producers intensified in the hope of regaining lost terrain.

Manufacturers also looked at new market segments as their order books were virtually empty. Machine manufacturers did profit from the mechanisation and rationalisation in production, which was also used to combat crises in other sectors.

During the second world war Dutch machine manufacturers received more and more orders, both civil and military, from Germany. However, due to the significant reduction in shipbuilding, boiler and motor manufacturers lost clientele from the shipyards. Overseas exports came to a complete standstill. Due to the stagnation in raw material supplies the manufacture of machines in excess of 100 kg was prohibited in 1942. As a result of this, and because of a lack of personnel caused by the employment policies of the occupying forces, production in medium and large companies came to a virtual standstill. The occupying forces claimed equipment and materials and destroyed some of the buildings.

RECONSTRUCTION

The initial emphasis during the reconstruction period was on repairs, but this was soon followed by a demand for new machines. By 1950 the Netherlands were on the threshold of a period of unparalleled growth, which also benefited the electrical industry. The production range of the machine industry changed. Whereas the construction of locomotives was more profitable in the early fifties, the manufacture of combustion engines now took priority.

Things changed again during the sixties. The focus was now on lifting and transport equipment, and machines and equipment for the food and luxury foods industries.

Dutch machine manufacturers benefited from the liberalisation in international trade following the second world war.

Large companies set up research departments and managed to resist patent policies. Economically the Netherlands maintained controlled wage policies in the period after the second world war. Limited increases were accepted so that production and employment were maintained. Because of the wage increases, however, manufacturers in other industrial countries were more intent on saving labour costs. They managed to implement far-reaching mechanisation and thus acquired a significant technological advantage.

When wages were released in 1963 the machine industry in the Netherlands faced considerably difficulties. During that same period companies also lost clients such as the mines in Zuid-Limburg and cotton mills in Twente. The period between 1960-1970 was typified by mergers and reorganisations.

SPECIALISATION

During the eighties other sectors saw renewed growth. The introduction of computer controlled technologies and high tech industries resulted in a revolution that affected the entire sector. New technologies were being integrated everywhere. Developments increasingly focussed on specialisation. The manufacture of less complex machines was moved to so called low wage countries. The Netherlands increasingly focussed on high quality technological products. During the nineties the number of employees in the research departments of large companies rose faster than the number of people directly involved in the production process. Universities played an important part in these developments. As a result the position of the Dutch machine industry was changed considerably.

INDUSTRIAL CITY OF HENGELO

Around 1850 Hengelo was still a small, mostly agricultural locality. Farmers mainly grew potatoes and rye. Raised fields were intersected by streams that supplied the necessary water, so that lower lying fields could be irrigated. Rough ground was used to graze cattle, but because of the poor condition of the soil, farming was not exactly profitable. Farmers needed extra income, in particular during the winter months. Cottage industries based on linen weaving did bring in some extra cash. Weavers managed to produce finer cloths by using better quality yarns. They specialised in multicoloured weaving so that Hengelo built up a reputation in this field. 'Bontjes' (multicoloured garments) from Hengelo were known throughout the area.

The availability of trained workers and clean water from the streams were two important factors in the development of Hengelo into a textile and industrial city. The railway also had a major impact. The construction of a railway line to Germany, with a stop in Ibbenburen in Germany, was of major importance to the supply of coal. C.T. Stork, H.P. Gelderman and S. Salomonsen were the promoters of this new infrastructure in Hengelo.

In 1865 Hengelo became a railway intersection. This accelerated the development of the textile industry, which was established during the fifth decade of the nineteenth century. The textile industry soon followed suit. The development of Hengelo and Twente, which was hardly industrialised at that time, was temporarily slowed down, however, by the cotton crisis caused by the American civil war (1861-1865).

TEXTILE INDUSTRY

Twente had always been a cotton mill centre. The establishment of the 'Enschedeese Katoenspinnerij' (Enschede Cotton Mill) in 1833 by King Willem I provided an added incentive for this branch of the industry. Unfortunately this business, as so many others, went under as a result of the economic downturn. Raw materials were virtually unavailable. Even the manual weavers in the various localities had to cease their operations. Weaving mills halved their production.

But new initiatives, aimed at business management, were afoot. Production efficiency received high priority as a result of the downturn. One way in which to achieve this was to link and concentrate operations. When things improved the establishment of new, large factories would ensue. This was only possible providing suitable locations were available. In order to be less dependent on foreign trade the government promoted the establishment of 'national spinning mills'. Hengelo would house one of the main large factories in this sector.

The first descendants of the Stork clan to focus on Hengelo included Charles Theodoor Stork and his brother, Jurriaan Engelbert Stork. Both were running small weaving mills. The mill run by Engelbert Stork was based in Oldenzaal. However, as this location provided insufficient running water, he set up a weaving mill in Denekamp in 1854. Home weavers produced multicoloured garments, but due to the lack of suitably trained personnel and a need for clean water, the brothers decided to look for a better location where both companies could be merged. In 1855 the company was moved to Hengelo, where more skilled multicolour weavers were available. Furthermore, the streams in and around Hengelo provided clean

water. Following a visit to King Willem III the C.T. Stork & Co. factory was awarded the title of 'Royal Weaving Mill'. A 'steam weaving mill' was also under discussion at the time.

In 1865 the 'Koninklijke Nederlandsche Katoenspinnerij' (Royal Dutch Cotton Mill) or NKS, was the first spinning mill to be established in Hengelo. The company was founded by Hendrik Veder. This entrepreneur was company manager at the Stork, Gelderman and Eekhout CV spinning mill in Oldenzaal, which had been established in 1860 alongside the other factories. Initially they would take over the existing spinning mill in Oldenzaal. As the two entrepreneurs eventually want to set up their own business they started to investigate possible new locations alongside the railway line. Although the favourable location alongside the railway represented an important advantage, it was also associated with a major disadvantage. Because the two entrepreneurs were the first and only ones in Hengelo they had to either train new spinners or attract personnel from elsewhere.

OTHER INDUSTRIES

Textile and metal companies represented the main industrial sectors in Hengelo. They included Stork and Dijkers as well as the Gietart Machinefabriek & Handelmaatschappij B.V. (Gietart Machine Manufacturing and Trading Company). The latter company, which was established in 1922 in Almelo, was moved to Pruisische Veldweg in 1935. In addition to the weaving mill of C.T. Stork & Co., three other large weaving mills, i.e. Hulshoff Pol, N.V. Nederlandsche Katoenspinnerij and Twentsche Bontweverij, were based in Hengelo around 1880. The city also housed a number of other industries such as salt extraction, the electrical industry, the Twente Gas Factory, a brewery and a brickworks.

The construction of the Twente canal in 1930 attracted the chemical industry. As a result salt extraction, which had started in 1918 in Boekelo, moved to the city. The 'Koninklijke Nederlandse Zoutindustrie' (KNZ) (Royal Dutch Salt Industry) is the current Akzo Zout Chemie. After the second world war the port of Hengelo became an important location for (new) industries. The A35 (E30) national trunk road also affected the development of Hengelo.

The presence of the textile and metal industries stimulated the electrical industry, which started during the eight decade of the nineteenth century. Electrical engineer, R.W.H. Hofstede Crull (1863-1938), played a very important part in and around Hengelo. Because of his marriage to the sister of G.J.O.D. Dijkers, who in turn was married to one of the Stork daughters and who was a director of an accessory plant, Hofstede Crull was in a position to set up his own business. In 1897, together with W. Willink, he established Hofstede Crull & Willink, initially as electrical consultants and later to build machinery. At the end of 1899 Hofstede Crull proceeded to establish a company for the generation and supply of electricity in Hengelo, in conjunction with a number of other Hengelo industrialists. This eventually resulted in the 'Heemaf', which was well known in and outside Hengelo and was later merged with Smit Slikkerveer and Hazemeyer into Holec. During the thirties Hazemeyer not only produced switch material, equipment, SKA motors and instrumentation, but also telephone sets for the PTT and diesel run electrical equipment for goods locomotives for the NS (National Railway). The N.V. Hollandse Signaalapparatenfabriek (Signal Equipment Factory), which was established in

1948 following a merger between Siemens, N.V. Philips Gloeilampenfabrieken, Herstelbank and R. Mees & Zonen.spe, was also based in Hengelo.

STORK AND URBAN DEVELOPMENT

Urban development in Hengelo would never have progressed to the extent that it has, had Charles Theodoor Stork decided against establishing his machine factory in the city. Around 1821 Hengelo was a mere village typified by ribbon development and the presence of streams. Cottage industries based on wool weaving were a major source of income. The clear water from the streams played an important part in the washing and bleaching of the wool.

The combination of this geographical factor and the available local skills was a significant incentive for the establishment of the first textile mills in Hengelo and other locations in Twente.

The main impulse for the industrialisation of Hengelo came from the railway however. The construction of various railway lines, national and regional lines, meant that Hengelo was at the centre of a railway crossroads. As a result major textile producers had excellent links with Germany and the rest of the Netherlands, so that both supply and sales were not limited to local markets. Machinefabriek Stork was established adjacent to the railway, behind the former Gelders-Overijssels Lokaal Spoor (GOLS) station. The company installed broad gauge track to connect to the Staatsspoor and GOLS railway yard.

Around 1920 Hengelo grew enormously as a direct result of the industrial revolution. Companies continued to extend around their original factories. Houses were built to house the workforces and additional facilities, such as shops and utilities, were established. The 't Lansink garden village, which was built in 1911, is the most high-profile example of 'factory housing'. It was located just outside the Stork site, in the shadow of the recently completed foundry.

The construction of the Twente canal around 1930 was the second important development in Hengelo. This provided companies with a third transport mode, in addition to roads and railways. The Stork site still serves as a link between the rail and canal network, via a central railway yard on the factory site.

THREE DIMENSIONAL STRUCTURE

In 2002 the urban structure of Hengelo (and Twente) is still based on a three dimensional split in company locations. The first generation of factories came to fruition because of the proximity of the railway. The second generation, which includes the chemical industry, developed around the port and canal. The third generation consists of companies sites linked to the motorway network. They all have individual spatial/economic characteristics.

However, the first generation of factories is fast disappearing. The railway linked economy is no longer based on large production units connected to goods transport facilities. They are being replaced by offices, homes and (recreation) facilities, which are based on personal transport facilities and proximity to the city centre.

This change is the motivation behind the spatial/economic transformation of the Hart van Zuid area.

Because of its original, enclosed structure the Stork site has become an island and is now separated from the city by the public road and railway network. However, this separation is only perceptible in a physical sense. From a social/economic and cultural/historic point of view, the company's influence is still very much in evidence throughout the city. Now that the functional role of the Hengelo industrial site is gradually decreasing, Stork's ongoing historic and social role can be applied to the original factory complex.

The basic concept is based on the premise that the area will be converted from an island into a city link.

REGIONAL COHERENCE

The Stork site is directly related to the old textile and machine factories in the region. Nearly all of these companies are located on or near the railway network as well. This environmental similarity ensures a degree of topical coherence, so that the reuse of an industrial legacy can be reinforced on the basis of a cultural/recreative context. There is also a physical/regional link via the existing rail infrastructure. This links historic factory complexes such as Stork, Holec and the Brewery site with the current motorway based areas Westermaat between Borne and Hengelo and the Business & Science Park Enschede.

In a north/south direction the Stork site acts as a link between the railway zone and the canal zone. A second east/west link runs via the Twente canal, that could gradually be used for recreational purposes. A link could be established with the Twickel estate to the west and the port of Enschede in the east, which is being redeveloped.

STORK: ESTABLISHMENT OF MACHINE FACTORY GEBR. STORK & CO.

During the sixth decade of the nineteenth century the ascendancy of the textile industry generated a demand for skilled repairmen for the machines used in this new industrial sector. Coenraad Craan Stork, the youngest brother of Charles Theodoor Stork, completed his studies in Delft and, together with his brother, went to Switzerland, England and Scotland to research textile machinery. In 1859 Coenraad Craan joined forces with Jan Meyling, a blacksmith in Borne, and set up a repair workshop for textile machines. This company was the foundation of the later engineering industry.

Coenraad Craan Stork died in 1863. In that same year Charles Theodoor Stork took on the management of the workshop. Meyling left the management in 1865 when the new name Machinefabriek Gebr. STORK & CO. was adopted. The official opening date of the new factory was 04 September 1868. The company partners included C.T. Stork, J.E. Stork and H.J. Ekker. The company employed 120 people and sourced its machines from Liege and Manchester. The machine factory consisted of a turning mill, foundry and forge, which were run by Belgian bosses.

Notwithstanding a flying start, the new company did not prosper. Already in 1869 J.E. Stork implemented a reorganisation and thereby saved the company from disaster. New investment was required. That same year the company was

expanded with a boiler construction shop, for which a special workshop was constructed. The turning mill was extended in 1872, following which the hundredth steam machine was delivered in 1873.

Because of the crisis in the cotton industry (in 1873) and the fact that the directors tended to buy their machines in England, Stork focussed on the production of steam machines for drainage and small operations. The Dijkers factory, which supplied components for Stork's boiler construction operations, was established in 1879. A separate factory for lifting gear was set up in 1898. It would eventually grow into one of Stork's largest operating units.

SOCIAL IMAGE

Right from the start, when the first factories were opened, the Stork family got involved in the social aspects of the company. Together with a number of other major companies, such as the Gist- en Spiritusfabrieken (Yeast and Spirit Distillery) in Delft, Stork was a front runner with respect to social provisions for its employees. This involvement manifested itself in the establishment of specific funds, a company newspaper and the gradual build-up of a number of social provisions.

EDUCATION

The government heavily promoted education at the end of the nineteenth century. This also benefited technical education. The Polytechnic College in particular was of major importance for the technical sector. It supplied engineers that went on to work as product developers for major companies. Other technical personnel was trained at technical schools.

Stork also opened schools to train its own employees. It established a factory school, a retraining school, a vocational school and a drawing school. The management also established its own nursery (forerunner of current nursery schools). The C.T. Stork school was opened on 02 November 1929. It taught domestic science to girls working in the factory. This would give them the necessary domestic skills before they got married.

OTHER PROVISIONS

In 1881 an 'Association to promote the interests of personnel associated with the Gebr. Stork & Co. machine factory' was set up. Fourteen years later, on 21 January 1895, D.W. Stork opened the machine factory Association Building. The building is still there.

The initiation of such a strong social policy within the company was definitely influenced by Jacob Cornelis van Marken, a personal friend of C.T. Stork. Van Marken was director of the Gist- en Spiritusfabrieken in Delft. In 1884-1885 he arranged for a special residential estate, the Agneta park, to be built near his factory.

The estate was based on an open, spacious design and was landscaped. The Agneta park was the initial example for the Hengelo Garden Village, which was built at a later date.

Van Marken in turn adopted the Stork brothers' idea of a sick fund, insurance and provisions for widows, orphans and the elderly.

In those days that kind of provisions were hardly controlled by the government.

Their introduction made working at the factory more bearable and promoted closer ties with the company.

HOUSE BUILDING

Stork was also a pioneer when it came to house building, as there was a dire need for housing. The rapid pace of industrialisation in the nineteenth century had resulted in a migration to the cities by mainly poor country folk. Hengelo did not escape this trend either, so that by the end of the century it had five times as many inhabitants as in 1850. Most newcomers had to fend for themselves as regards somewhere to live so that the available accommodation was often abominable and commanded exorbitant rents. The quality of new housing did not become regulated until the Housing Act was introduced in 1901.

As soon as the new machine factory of Gebr. STORK & CO was established in 1867 the Hengelosche Bouwvereniging (Hengelo Building Association) was set up. Its objective was 'to alleviate the lack of good civil housing' through the purchase of land for the construction of working-class houses. C.T. Stork was the company founder. This initiative did much to enhance Stork's reputation. The progressive social policies of the company were often quoted as an example.

Research had shown that there was a definite link between the productivity of the workers and their living conditions.

Influenced by the Delft example and the writings of English and German theorists, the Stork family decided to establish its own 'garden village'. The task was as follows: 'to create an agreeable, bright environment by constructing a colony of houses for workers and officials, where the constrictions imposed by narrow roads or encroached housing had to be replaced by light and airy conditions, coupled with affordable rents'.

A fifteen hectare site was purchased to the south west of the foundry, away from the often prevalent west wind.

The basic concept demanded that the old trees on the site, and many of the existing roads and pathways, should be spared. In 1909 garden architect, P. Watez, submitted an urban development design at the request of the Amsterdam architect, Karel Muller.

Muller (1857-1942) was a friend of the Stork family and cooperated with other architects when creating his design. For example L.A. Springer was recruited to landscape the gardens. The first phase of the 't Lansink garden village was completed between 1911 and 1917.

The various houses, typology and rent prices were recorded in a special book. In principle the 't Lansink garden village was accessible to everyone, but personnel from associated building associations were given priority.

The gardens in the 't Lansink garden village are considerably larger than those in other estates of the same era. The village seems to be based on a rudimentary design, no less because of the different house types and variations. Its design was definitely inspired by English examples. This is apparent from the central square, curving lanes and white washed buildings. Various shops and a hotel were arranged around the square.

During the construction of the second phase of the 't Lansink garden village (between 1917 and 1926) the sandpit, which had been created due to sand dredging during the first phase, was put to good use. It was converted into a pond and was used as a swimming pond from 1922 onwards. Its design was based on the pattern of the surrounding landscape. The 'Woolderbinnenbeek' (local stream) acted as an overflow. The swimming pond is still being used for the same purpose. It recently underwent a complete restoration with assistance from Stork. It is managed by an association of volunteers.

PART 2 CHARACTERISTIC COMPLEX

CIVIL/HISTORIC ANALYSIS

A civil/history inventory was prepared for the Hart van Zuid area. The following brief description of Stork and Dijkers is based on the multitude of collated research data.

STORK

The origins of the current Stork factory complex date back to the establishment of an iron foundry behind the station of Hengelo in 1868.

The initial construction was based on freestanding buildings interconnected by railway tracks. Only small sections of fascia and structures remain from the oldest buildings, mainly as part of larger buildings. By the end of the nineteenth century the enormous growth of the complex had resulted in a disorganised coagulation of buildings. This was due to extensions to existing buildings as well as compact expansion in a south-easterly direction. The terrain in front of the factory and railway track was also filled in.

Around 1900 the complex was the subject of considerable expansion in a south-easterly and north-westerly direction. The axis of both extensions was centred around a new railway branch line.

One of the most remarkable buildings on the site is the model making plant with water tower, which was recently re-designated as a fire station.

During the second and third decade of the twentieth century various other extensions, mainly on existing terrain, were completed. This again intensified concentration. Around 1953 a site to the south of 't Esrein, which used to house the Insulinde printing plant, was purchased. The existing development was demolished except for a few buildings along Langelermatweg.

Behind them the largest building in the complex, the new pipe bending plant, was constructed between 1958 and 1968. The current front with office buildings, in which older elements have been maintained, was also created during that time. The most recent changes to the complex mainly relate to the reorganisation of the buildings and (minimum) maintenance of fascia and roofs, including fascia linings with steel sheet piling profiles. The other buildings are mainly small scale.

DIKKERS

The oldest buildings on the Dijkers complex are thought to date back to approximately 1900. The two main buildings at Industriestraat, the iron foundry and accessory plant, already appear on maps dated 1910. These buildings bear witness to many reconstructions and adjustments. There were hardly any extensions. From

1930, and during the fifties in particular, new industrial halls were constructed on the site to the south of 't Esrein.

Offices were built in front of the accessory plant in Industriestraat. The factory remained in operation until about 1990.

The buildings were then taken over by EMGA, which allocated new functions to all of them, ranging from a school to a collective company building.

CHARACTERISTICS

Notwithstanding the huge building diversity and many modifications, the complex appears to be a coherent unit. This is mainly based on a linear link between the buildings along the two sizeable, T-shaped company railway tracks that run across the site. This coherent picture hardly changed after the demolition of most of the rail tracks and turntables around 1990. Many of the details originate from the track layout, for example the slightly curved shape of the southwest fascia of Building 50, the current rails in Building 35 and the water reservoir for locomotives.

The coherence between buildings is also supported by the fascia design, i.e. iron windows and iron frameworks with brick infills. In fact this traditional construction method was still used during the seventh decade of the twentieth century. Most of the buildings are 'characteristic' or 'representative' for a specific period and/or function. When reallocating buildings it is vitally important to list and categorise all monument/historic values (not only civil/historic and industrial/archaeological values) in order to prevent them from being lost through ignorance.

It is mainly the huge scale of the complex that is remarkable. Complexes of this size are extremely rare in the Netherlands. The Stork factory site has a dual significance to the inhabitants of Hengelo. On the one hand the eye-catching buildings - such as the quarter round office building and Vereenigingsgebouw – are the identifying marks of a proud Hengelo company.

On the other hand the invisible but difficult production process created a sense of distance, even fear, from everything that went on behind these walls and gates. Looking at it from an urban perspective the objects on the site sometimes have a different significance than would normally be allocated on the basis of the site's functions.

The Stork terrain is characterised by clusters of buildings grouped around an industrial open space. The clusters are based on production processes. Some of them had walled enclosures with a porter's lodge at the entrance. The industrial area was organised around a wide track complex, that branched into the main track and led all the way to the Stork canal port. The wagons had direct access to the factory halls via turntables. This resulted in the narrow industrial roads, that are still typical for the site. The railway yard was the contour of the urban road network that surrounds this complex. Storage, manoeuvring and parking areas are located between the building complex and railway yard. The organisation resulting from the development of the Stork company is based on seven environmental/urban development characteristics, the guiding principles of the design process.

1 SCALE CONTRAST

The scale contrast between the overpowering factory units and surrounding small scale housing areas is typical of the local situation. It increases familiarity with the overall planning area.

2 GROUPS

The functional building groups within the complex such as Stork Hijsch, the Foundry, the offices, the Dijkers accessory plant, the railway yard and port terrain all have individual characteristics. These different atmospheres can be reinforced by maintaining the groups as sub areas and developing them around a specific topic.

3 INDUSTRIAL ROADS

The industrial roads and railway yard are the new foundations for the infrastructure and public spaces.

The typical rectangular structure of the buildings acts as a guideline for future developments.

4 PORTERS' LODGES

Because the site was not accessible to the public the porters' lodges acted as industrial gates to the city. The entrance gates or porters' lodges could be reinstated in areas that used to provide access to the complex in the past.

They could be supplemented, if necessary, with new 'beacons' for future access to the planning area.

5 INDIVIDUAL GEMS

The area is characterised by a coagulation of (factory) buildings, within which a number of extraordinary elements are kept free. The objective is to increase the spatial perception, visibility and public nature of these typical elements - the gems of the planning area. They include:

6 COMPLEX STRATIFICATION

The site has changed so much over the years that hardly any of the 'original' elements are left. Permanent changes have had a strong impact on the current identity. The typical stratified, stacked, punctured and linked structure of building sections is being maintained where possible, in particular in the northern section of the planning area. This technical/pragmatic transformation method is described in detail in the section on the 'reuse of objects'.

7 VISIBLE LINKS

The components are not just linked by the railway infrastructure, but also by a coherent system of steam and water lines, walkways and electrical lines. This pragmatic, internal and functional link between units could possibly be reused and reinterpreted. For example with a growing network of walkways and cables/lines, in particular in the northern section of the planning area.