# Cluster Subdivision Design Guide

### A Practical Guide to Effective Cluster Subdivision Design Featuring Successful Cluster Subdivisions in Chester County



Implementing the Principles of LANDSCAPES



#### BOARD OF COUNTY COMMISSIONERS

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Featuring Successful Cluster Subdivisions in Chester County



Prepared by the Chester County Planning Commission, 2003

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# Chapter One Introduction



### Purpose of the Cluster Design Guide

This publication was prepared by Chester County Planning Commission (CCPC) staff to promote and support *LANDSCAPES* by providing municipalities with the means to improve cluster design in their communities and achieve the attractive neighborhoods they desire. Benefits of cluster subdivisions include the protection of natural and historic resources, farmland, scenic viewsheds, and the provision of recreational activities. These benefits clearly support the principles of *LANDSCAPES* as well as the goals of many Chester County municipalities. Unfortunately, past negative experiences of some Chester County municipalities have caused officials to reconsider whether they should continue to permit this development option. While the concept of saving open space through flexible design standards sounds good in principle, the end product may be visually or poorly designed.

#### **Design Makes a Difference**

Many municipalities currently allow for cluster developments in their zoning ordinances. In some cases, these provisions have been on the books for many years, but residents and municipal officials have not always been happy with the results of the developments that have been approved and built. Their dissatisfaction has most often been with the design of the subdivision and how it looks on the ground. A common design failure is the inappropriate placement and visibility of the preserved open space. The open space may be too fragmented, not visible from a public vantage point, or too little open space was required in the first place. A related design problem is that, in conjunction with the lack of green space, the housing appears too dense for the rural setting it was intended to preserve. Design does make a difference.

#### The Need for Positive Examples

These negative images can be addressed through better design of the subdivision during the planning stage. Ordinances that allow for cluster subdivisions need to provide guidance in the siting of the houses and the open space so as to result in a better design for the community. Because several municipalities expressed a reluctance to include or consider cluster subdivision provisions in their ordinances, CCPC staff created an informal "cluster tour" of four well-designed cluster subdivisions. This tour allowed municipal officials to see real-life successful examples of cluster subdivisions and be assured that the cluster design option could meet their goals of natural resource and farmland protection in combination with an attractive residential development consistent with the community's rural character.

#### **Comprehensive Inventory of Successful Cluster Subdivisions**

Because of the high level of interest shown by municipal officials and planners in the original "tour" of positive cluster examples, it was decided to undertake a comprehensive inventory of successful cluster subdivisions in the County along with an analysis of the design elements that made them appealing. The original tour compiled in 2000 by CCPC staff included four established communities in the southern half of the County—two in Pocopson Township and two in Kennett Township. A package of information was compiled with some statistics and basic facts along with aerial photos showing the layout of each of the developments. A brief summary of this tour and information packet was published in the winter 2001 CCPC newsletter. The release of the newsletter was soon followed by numerous requests for reprints of the packets. This design guide directly resulted from the interest shown in the original cluster tour.

#### This Design Guide is Intended for use by

- Municipal officials with an interest in improving the quality of cluster subdivisions in their community;
- Planners interested in implementing better cluster design provisions in land use ordinances;
- Developers wishing to incorporate appealing design features into their cluster development proposals; and
- Residents or others with an interest in seeing successful examples of built cluster subdivisions in Chester County.

# What are the Benefits of Cluster Subdivisions?

The concept of a cluster subdivision is appealing on several levels:

#### **Natural Resource Protection**

A major advantage of this design is that natural resources (or constraints) on the site, such as floodplains, wetlands, woodlands, and steep slopes, can be located in the open space and protected from disturbance. Not only are these resources preserved, but the serious negative environmental side effects associated with development, such as increased soil erosion and sedimentation of streams, can be prevented. Greater groundwater recharge, through a reduction in impervious surface (i.e., surfaces that water cannot penetrate), is another environmental benefit of cluster design.

#### **Historic Resource Protection**

Historic resources can also benefit from the cluster subdivision option. For example, an historic farmhouse and outbuilding could be allowed in or surrounded by the open space, preserving both the farmstead and its historic landscape context.

#### **Recreational Opportunities**

The preservation of open space provides recreational opportunities for the residents of the subdivision and, if the land is donated to and accepted by the municipality, for all residents. Some portion of the preserved open space is generally required to be free of sensitive natural resources and constraints. These areas can be used for either passive enjoyment of the outdoors, walking paths, or tot lots. Active play fields could also be located in the open space if there is enough distance between residential and natural areas to prevent conflicts.

#### **Scenic View Preservation**

In a properly designed cluster subdivision, scenic viewsheds and traditional rural landscapes can be preserved. In some cluster subdivisions, the houses are set back and screened so well from existing roads that a passing driver or pedestrian would not even be aware that the development exists. Residents of a well designed cluster subdivision will have views of the preserved open space, providing scenic woodland or meadow views not possible in a traditional subdivision.

#### Infrastructure and Maintenance Costs Reduction

By locating houses closer together on a tract, the length of roads and utility lines can potentially be reduced. This provides both construction cost savings for the developer and lower road maintenance costs for the municipality if the roads are publicly dedicated. Because earth disturbance and impervious surfaces on the site can be reduced, soil erosion and stormwater runoff can also be decreased.

#### **Community Creation**

The compact development form generally associated with cluster subdivisions provides the opportunity to create community-oriented neighborhoods. The neighborhoods can be more clearly defined, allow for easier interaction between residents, and provide access to shared open space amenities. The cluster design also provides an alternative for those who are looking for a lower maintenance living option. Many people prefer having less yard to maintain and landscape while still having access to trails, woodlands, and meadows. As the population continues to age, this type of lower maintenance residential option will become increasingly important.



**Cluster Subdivision** Source: Chester County Planning Commission, 2003.



**Conventional Subdivision** Source: Chester County Planning Commission, 2003.

### What Is a Cluster Subdivision?

One of the essential features of a cluster subdivision is the large portion of the tract that is preserved in permanent open space. For the purpose of this publication, only those developments that preserve at least 50 percent of the original tract area as undeveloped open space fall under the definition of a cluster subdivision. While the terms "cluster subdivision" and "open space subdivision" are often used interchangeably, the emphasis here is on the design elements of a cluster subdivision that make it most appealing, including the configuration of the preserved open space. Other terms for cluster subdivision include "conservation subdivision" or "site sensitive subdivision" both of which emphasize the goals of preservation of open space and the conservation of natural features on the site.

In order to achieve significant open space preservation, houses on the site must be located closer together and on smaller lots than found in conventional neighborhoods, hence the term "cluster." Rather than having 50 homes on one acre lots spread over an entire 50 acre tract (conventional), they might be located on one-half or one-third acre lots allowing 25 to 30 acres of the lot to be preserved as open space. In a properly written ordinance, the smaller the lots, the more open space will be preserved.

Clustering can accommodate a wide range of housing types including single-family detached, townhouses, twins, and apartments. While many cluster developments may have a mix of dwelling types, they can be equally successful with only single-family detached homes as long as smaller lot sizes are permitted. Each municipality should tailor their cluster subdivision standards to best meet their community planning goals. A sample cluster subdivision ordinance is located in Appendix B.

### The Chester County Cluster Subdivision Inventory

#### **Compiling the Initial Inventory**

The first step in creating this design guide was to develop an inventory of the approved subdivisions in the County Act 247 review files that were comprised of at least 50 percent open space. Information on the location, tract size, number of units, length of streets, type of sewer and water facilities, and whether there was a homeowners association was also compiled from the files for each of the subdivisions meeting the minimum open space criteria. In 2003, over 80 cluster subdivisions were found to have been approved and built in the County since the 1970s, with the majority of them having been approved in the 1990s.

#### **Site Visits**

Once this basic information was compiled a site visit was made to each of the developments. Prior to the site visits, an initial list of potential design features was created to help assess how well the development met the definition of a "successful" cluster development. (See Chapter Three for the descriptions of these design elements.) Notes were made on the overall impression of the community and photographs were taken of both positive and negative attributes.

#### **Review of Positive Design Elements**

The final step in creating a useful inventory and design guide was to review the compiled information and determine which developments exhibited the most positive design elements and could best be used as examples of successful cluster subdivisions. Interestingly, while some developments might exhibit only a few of the positive design elements, they were incorporated into the development so well that the subdivision was considered a highly successful example. In other cases, a subdivision might have exhibited a number of positive design elements without giving an overall impression of good design. Because of this finding, the number of design elements found in a cluster subdivision was not the sole criteria used for its inclusion as a successful example.

#### **Identifying the Most Important Design Features**

The assessment of design elements also made clear that some design features were much more important than others in creating a successful cluster development. Probably the single most important element, especially for residents who do not live in the subdivision, is to locate sufficient open space along the public road to buffer the view of the development portion of the tract. The worst possible combination is to crowd all of the houses next to the public road, hiding the open space and leaving no indication that any significant green space or resources were preserved. A single bad experience with a poorly designed cluster subdivision can create a permanent negative impression for both municipal officials and residents that will be hard to overcome. Chapter Three describes these design elements and how they can be incorporated into the planning and review process.



The topography and deep setback included in the open space provide an effective screen and rural foreground at Parke Farm.



When greater setbacks are not provided, the development will have a more significant visual impact on its surroundings.

### **Chapter Two**

Successful Cluster Developments in Chester County



### The Most Important Design Elements

Twenty-five successful cluster developments are described in this chapter. These developments are included to show built examples of how specific design elements can be combined and used to create attractive and livable communities.

Sixteen design elements, discussed in detail in Chapter Three, were a key component in the identification of the successful cluster subdivision developments described below. Five of the 16 design elements were identified as the most important or immediate "first impression" elements for a successful cluster subdivision:

- Protect scenic views setbacks and screening from existing roads (page 74)
- Maintain existing character open space uses for pasture, farmland, orchards, and woodlands (page 69)
- Street width (page 117)
- Preserve natural resources (page 91)
- Alternative parking design (page 133)

The first design element, protect scenic views — setbacks and screening from existing roads, was identified as having the greatest positive influence on the first impression of a cluster development. The lower the visual impact of the new development, the more successful the cluster subdivision. When views of the development are well screened from adjacent roadways, the perceived impact is greatly reduced. Sixty percent (15 of 25) of the developments identified as successful implemented this design element successfully and reduced the impact on neighbors and other residents. The screening design technique is particularly important for preserving the character and scenic appeal of the rural landscape. Although the other design elements are essential in creating a more desirable living arrangement and reducing environmental impacts, the positive impact provided by the setback and screening of subdivisions is the most immediately evident when viewing a cluster development for the first time.

### Subdivision Descriptions

A total of 25 representative subdivisions were identified as "successful examples" based on the preliminary criteria (50% permanent open space), inclusion and treatment of design elements, and perception of the tour participants during the initial site visit. The successful examples are located primarily in the eastern half of Chester County with a few scattered in the western half of the County as shown in Figure 3-1.

To identify a general geographical location, the cluster subdivisions have been identified based on their proximity to towns and population centers. These include the areas surrounding the boroughs of Phoenixville, Malvern, West Chester, Downingtown, Coatesville, Kennett Square, and West Grove and the village of Bucktown. Clusters are organized from north to south and are generally located within a five-mile radius of the associated centers.

This chapter provides a description of each of the 25 examples including location, tract size, amount of open space retained, and number and type of dwelling units. A discussion of special features such as trails, recreational facilities and preserved historic structures is also included in the descriptions. Note that not all of the successful cluster subdivisions are ideal from all perspectives. Some of them may lack such elements as fully integrated pedestrian facilities or their streets might be wider than necessary. However, their overall appearance and use of design elements warranted their inclusion in this chapter.

An aerial view of each subdivision has been provided to facilitate orientation of the details described above. The aerial photographs were taken in 2000. Some of these cluster developments may have been partially under construction at that time.

#### Figure 3-1 Cluster subdivision location map

Directions to the successful cluster developments are located in Appendix C. If visiting one or more of the cluster subdivisions described in this chapter, please carefully review the guidelines described on page 179.



#### Bucktown Area

#### 1: Ridgelea



2: Kimberton Greene, Phases I and II

3: Pickering Glen

4: Charlestown Hunt

Malvern Area

5: Waynesborough Woods

6: Deerfield Knoll



7: Marsh Harbour

8: Pinebrooke

9: Uwchlan Woods at Williamsburg

#### West Chester Area

10: The Woodlands

11: Parke Farm

12: Sagamore

13: The Jefferson at Westtown

14: The Greens at Penn Oaks

15: Brandywine at Thornbury, Phase 1–5, 9

16: Brandywine River Estates

17: Birmingham Hunt, Phase 1

18: Reserves at Chaddsford

19: Oakdale

#### Coatesville Area

#### 20: Country Club Valley

#### Kennett Square Area

21: Tullamore

22: Coniston

23: Southridge

24: Ponds at Woodward

#### West Grove Area

25: Villages at Penn Ridge, Phase I



#### **Location** South Coventry Township

**Tract size** 115.1 acres

**Open space** 55.8% (64.2 acres)

#### Number of units

159 single family units Proposed institutional use Proposed commercial use

**Year approved** 2001

### I: Ridgelea



Ridgelea is located just southeast of the intersection of Routes 100 and 23 in South Coventry Township. This single family development is visible from Route 23, but well buffered from Route 100. Most of the preserved open space surrounds the homes and preserves a scenic viewshed on the eastern half of the parcel.

Because this development is located in an area which could potentially be developed as a village center, creating a pedestrian-friendly atmosphere was a priority in its design. The homes are at a village scale and are set closely to the narrow cartway. In addition, the homes feature front porches, which promote interaction between neighbors, and garages which are set back further from the cartway. Also enhancing the pedestrian atmosphere are the development's street trees and sidewalks on both sides of the internal roadways. The development's layout successfully reduced impervious coverage by including landscaped islands, cul-de-sac islands, and common green space areas. In addition, these areas serve as gathering points for neighbors because of the development's walkable design.

Several parcels of the subdivision were set aside for future development including a potential school, municipal building or community center, an assisted living facility, and possibly commercial opportunities. Ridgelea demonstrates that cluster development can successfully accommodate future uses, preserve substantial amounts of open space, and create a neo-traditional atmosphere.



This landscaped cul-de-sac provides common green space for recreation and reduced impervious surface coverage.



Street trees along the sidewalk and narrow cartway enhance the pedestrian's experience.



**Location** East Pikeland Township

**Tract size** 35.07 acres

**Open space** 63% (22.22 acres)

**Number of units** 140 apartments and townhouses

**Year approved** 1998

## 2: Kimberton Greene, Phases I and II



Kimberton Greene is located in East Pikeland Township just south of Seven Stars Road about one-half mile west of the borough of Phoenixville. The view from Seven Stars Road is screened very effectively through the preservation of existing woodland and extensive areas of turf and meadow. Although landscaping (street trees and yard vegetation) within the development is comprised primarily of recent plantings, in a few years the new plantings will enhance the preserved woodland. The development was designed at a human scale through the use of short setbacks and varied facades.

Open space areas are located throughout the development creating islands of green which are enhanced by the landscaped boulevard and stone block curbing. Sidewalks are located along one side of the street throughout the development providing for pedestrian circulation.



Short setbacks and sidewalks create a pedestrian scale development.

An outstanding feature of this development is the extensive trail system. The trail system links the entire development to the open space areas along the adjacent roadway, the preserved wetlands, and through the areas of woodland.

Kimberton Greene is an attractive, wellmaintained development that provides extensive pedestrian facilities and creates a neighborhood atmosphere.



A scenic trail through the preserved open space creates a community amenity in Kimberton Greene.



A bridge preserves a stream's integrity while creating a link between housing and open space.



**Location** Schuylkill Township

**Tract size** 115.22 acres

**Open space** 63% (72.56 acres)

**Number of units** 49 single family units 1 agricultural use

**Year approved** 2000

# 3: Pickering Glen



Pickering Glen is located in Schuylkill Township on the southwestern corner of the intersection of Pot House Road and Route 29. At first glance, Pickering Glen appears to be a conventional development. However, the open space associated with this development is vast and located primarily behind the rear yards of the 49 single-family homes along the perimeter of the tract. Historically, this land was active farmland, therefore the subdivision was designed on a virtually blank slate without the benefit of established woodland for use as screening. A large portion of the open space is maintained as a meadow and retains an agricultural appearance. The historic farmstead is located at the rear of the tract and creates a link between the past and present.



The row of mature trees along the entrance drive creates a link to the past and a grand entranceway.



Sidewalks, accompanied by attractive street lighting and trees provide comfortable pedestrian access along Pickering Glen's main entrance road.



The setback from Pot House Road is maintained in meadow and retains the appearance of farmland.

The boulevard (at the entrance) and granite curbing (throughout the development) create a grand entrance into Pickering Glen with houses located along the loop road at what appear to be 50+ foot setbacks. Screening from Pot House Road and Route 29 could have further enhanced this development's appearance. The substantial boulevard appears to have been designed to preserve an existing allee of trees.

Although a walking trail is included around the perimeter of the tract, it appears to be lightly used and minimally maintained. Sidewalk facilities are provided on one side of the roadways. Although the layout of the development includes wide roadways, as the street trees mature they will soften and enhance the transition from the roadway to the individual yard areas.

From a design standpoint, Pickering Glen may be perceived as a typical development. However, the preservation of an historic farmstead and more than 72 acres of open space are significant and qualify this development for inclusion on this list.



**Location** Charlestown Township

**Tract size** 183.42

**Open space** 54% (98.60 acres)

**Number of units** 75 single family units 288 condominiums

**Year approved** 1997

# 4: Charlestown Hunt



Charlestown Hunt is located in Charlestown Township adjacent to Route 29 (State Road) south of Buckwalter Road, less than one mile from the borough of Phoenixville. The most noticeable feature of this cluster development is the understated entrance drive on Route 29 near Pickering Creek. Other than the short sidewalk and defined curbing, the entrance is unobtrusive and gives no indication that over 350 dwelling units (both single family and townhouse) are located just beyond the line of mature woodland.



The preservation of mature woodland significantly reduces the visual impact of new development.



The trail system is well landscaped and accessible from most areas in the development.



Pedestrian facilities and amenities are located throughout Charlestown Hunt.

Once within the development, the narrow roadway and extensive sidewalk and trail system create a pedestrian-friendly atmosphere. The open space areas not only screen adjacent roadways, but also provide green common areas throughout the development. Stormwater management facilities within the development are beautifully landscaped and screened and provide necessary infrastructure as well as a community amenity.

Recreational facilities, such as tennis courts, playing fields, baseball fields, a pool and clubhouse are centrally located within the development and are easily accessible from the sidewalk and trail system. Overflow parking areas reduce the impact of congestion on the narrow interior roadways.

The inclusion and treatment of key design elements reduce the impact of the development on surrounding uses and provide outstanding pedestrian and vehicle accessibility. This development proves that attention to detail and the implementation of the design elements described in Chapter Three can significantly enhance any cluster subdivision.



**Location** Easttown Township

**Tract size** 58.01 acres

**Open space** 56% (32.9 acres)

**Number of units** 109 townhouses

**Year approved** 1993

# 5: Waynesborough Woods



Waynesborough Woods is located off of Route 252 just to the south of Leopard Road in Easttown Township. The use of a subtle berm and a mix of old and new plantings creates an attractive and effective buffer to the busy traffic on Route 252. The landscaped boulevard entrance to Waynesborough Woods and the use of curbing throughout the development is quite appealing. The use of traditional design materials and abundant landscaping create interesting and attractive nodes of housing.

Houses are clustered together around heavily landscaped courtyards designed for parking and, in some cases, limited recreation. The houses and landscaping blend well as a result of the use of cedar shingles, roofing, and other natural materials. The use of natural materials is a theme throughout the development. Wooden street signs and landscaped cul-de-sac islands successfully soften any expansive areas of asphalt and concrete that surround the uniquely laid out nodes of housing. Access is improved by the inclusion of a secondary access from Route 252 that is located about one-quarter mile to the east of the main entrance.

Waynesborough Woods is a very attractive development. The use of a subtle berm, thoughtful layout, and extensive landscaping have created a development that blends into the community. The inclusion of pedestrian facilities, such as a trail network, would further enhance this successful cluster subdivision.



Planted islands and curbing provide effective and attractive access management.



The subtle berm and plantings provide a buffer to Route 252.





**Location** Willistown Township

**Tract size** 42.69 acres

**Open space** 78% (33.56 acres)

**Number of units** 119 single-family units

**Year approved** 1986

# 6: Deerfield Knoll



Deerfield Knoll is located just north of Route 3 off of Dutton Mill Road in Willistown Township. The entrance is clearly marked but not overwhelming or ostentatious. Community, rather than the term development or subdivision, is more appropriate to describe this grouping of single-family homes laid out among the existing mature woodland. The overwhelming feeling as you move through Deerfield Knoll is of neighborhoods and an attention to detail not often found in modern subdivisions.

The roads meander through the small manicured lawns and surrounding woodland, with curbing used only to define turning radii or surround the eyebrows and islands. Although there are no sidewalks located in the development, the scale of the structures, short setbacks, and narrow cartway create a pedestrian-friendly atmosphere. Traditional street lighting and small pockets of open space with benches and gazebos add to the charm and pedestrian scale of the community.



Narrow roadways, short setbacks, attractive street lighting and thoughtful landscaping define this community.



The unique layout of homes and integration of mature trees in Deerfield Knoll create a sense of privacy while promoting interaction with neighbors.



The retention and integration of the mature woodland greatly enhances the layout of this dwelling unit.



Amenities, such as benches, create a sense of place and a destination for residents.

The average lot size in Deerfield Knoll is quite small, however, the homes are situated in such a way that they accommodate a detached garage and individual private driveways. Although the homes are in close proximity to one another, the layout creates a sense of privacy. The charm and appearance of the homes and community are unquestionably enhanced by the preservation and integration of the existing woodland. The thoughtful treatment of necessary community facilities, such as the retention pond, reduces the impact of the facility, creates a community amenity, and provides yet another destination for residents.

Deerfield Knoll successfully combines a sense of traditional rural community living with medium density housing. While accommodating nearly 120 single-family homes on about ten acres, the community has preserved almost 34 acres of open space. Deerfield Knoll uses its open space not only to create a significant buffer to adjacent uses and roadways, but to provide amenities for the community's residents.





**Location** Upper Uwchlan Township

**Tract size** 86.4 acres

**Open space** 55% (47.10 acres)

#### **Number of units** 181 single-family units 170 townhouses

**Year approved** 1988

### 7: Marsh Harbour



Marsh Harbour is located in Upper Uwchlan Township off of Park Road on the eastern side of Marsh Creek State Park. The view from Park Road is fairly well-screened, considering the townhouses are set back only twenty or thirty feet from the edge of the road. The entrance into this large development is anchored by a nicely landscaped boulevard. Marsh Harbour consists of just over 350 units, divided almost evenly between single-family homes and townhouses.

The townhouses are located near the entrance, along Park Road, and in the northeastern corner of the development. The planting and design of street trees and other landscaping was thoughtfully done and softens the tall facades of the three-story buildings and the driveway surfaces. Access management and parking in this development appear to have been well planned as evidenced by the use of landscaped cul-de-sac and parking islands. These features not only enhance the appearance of these turnaround facilities, but reduce the amount of impervious surface.



Landscaped parking and cul-de-sac islands are attractive and reduce the amount of impervious surface.



The single-family homes offer a variety of architectural designs that blend well with the thoughtful landscaping.



The development benefits from its proximity to Marsh Creek State Park.

The single-family homes are located in the southern portion of the tract and are surrounded on two sides by very large areas of open space. In addition to the open space, Marsh Harbour is adjacent to Marsh Creek State Park, affording views of the lake and associated woodland. The singlefamily homes are similar to those in Deerfield Knoll, with a variety of attractive architectural designs and colors. Some of the homes offer side-load garages which minimize the dominance of the garage. Sidewalks are provided but are not consistently located throughout the development. An historic structure has been preserved and is centrally located in the development.

Although the open space provides a buffer between uses in the center of the development, it is primarily on the periphery. The northern area of open space is open and consists of areas of lawn, meadow, and a pond. The southern area is directly adjacent to Marsh Creek State Park. Other recreational facilities, such as tennis courts and a club house, are located near the entrance.

Marsh Harbour is an attractive community that offers a variety of housing, open space resources, and proximity to a major recreational facility. Although this development provides amenities within and outside of its boundaries, pedestrian facilities could be further enhanced by a more consistent sidewalk system and trail facilities.



#### **Location** East Brandywine Township

**Tract size** 11.25 acres

**Open space** 50% (5.63 acres)

**Number of units** 31 townhouses

**Year approved** 1988

## 8: Pinebrooke



Pinebrooke is located off of Route 322 in East Brandywine Township, about one mile north of Guthriesville. It is a relatively small development of 32 townhouses laid out around a central green at the end of a single access road. The entrance from Route 322 is subtle, as is the impact of the development on surrounding uses. Most of the development is surrounded by a band of wooded open space with the eastern half of the development tract consisting almost entirely of dense woodland. The natural materials utilized in the design of the dwelling units enables them to blend into the landscape. The housing is thoughtfully laid out in a varied configuration and takes advantage of the open space with a view of woodland from almost every dwelling unit.
The sidewalk system and central green anchors and unifies the development. The sidewalk facilities link all of the residential uses with the recreational facilities located near the entrance to the development. The tennis and basketball courts provide convenient recreational facilities for the residents and a unique buffer to Route 322. The onstreet parking facilities are enhanced by the use of well-planted parking islands and traditional lighting fixtures.

The large area of open space to the east is almost entirely wooded and provides a recreational amenity as well as an effective buffer to the adjacent agricultural uses and Route 322.

Pinebrooke is pedestrian-friendly, attractive, and successful in its integration and preservation of open space. This development also provides an effective buffer between the residential use and agricultural use, where conflicts can often occur.



Landscaped parking islands and traditional street lighting enhance the parking and reduce impervious surfaces.



The central green creates a community focal point within Pinebrooke.



**Location** East Caln/Uwchlan Township line

**Tract size** 60.32 acres

**Open space** 52% (31.50 acres)

**Number of units** 46 single-family units

**Year approved** 1999

# 9: Uwchlan Woods at Williamsburg



Uwchlan Woods at Williamsburg is located on the East Caln/Uwchlan Township line between Route 282 and Route 113. The landscaped boulevard into this development provides a welcoming entrance to the community. The existing trees are enhanced by planted street trees that line all of the development's cartways. In addition, attractive street lighting and sidewalks on both sides of the roadways create a comfortable pedestrian scale and promote non-vehicular circulation. As these street trees continue to mature, the pedestrian facilities will become increasingly inviting to the residents of this development.

The large single-family homes have modest setbacks from the cartway. By featuring sideload garages, the housing design does not focus on vehicular accommodations. Adding landscaped cul-de-sac islands is a simple improvement that could have farther reduced impervious coverage while improving the scenic qualities of the community.

Much of this development's open space is used to buffer the homes from Norwood Road and other surrounding residential uses. With the exception of a small green space and an interspersed wooded lot, the residents have limited access to the preserved open space. Increased efforts to preserve the development's mature trees integrate the homes into the woodlands, and the inclusion of a trail system would have further showcased the site's natural features. Nonetheless, this development's walkable streetscapes and amount of preserved open space warrant its inclusion on this list.

This development was selected solely by the characteristics that were displayed within this phase; these design elements may or may not be exhibited in other phases of the Williamsburg development.



A narrow cartway and sidewalks promote pedestrian circulation within Uwchlan Woods.



**Location** West Whiteland Township

**Tract size** 21.57 acres

**Open space** 61% (13.3 acres)

**Number of units** 65 townhouse units

**Year approved** 1988

## 10: The Woodlands



The Woodlands is located on Boot Road, just west of Route 100 in West Whiteland Township. The townhouses of the Woodlands are laid out around courts along a single access road. The entrance to this development is quite unique, combining sidewalks, vehicular access, and a gazebo that houses the residents' mailboxes, making it reminiscent of the entrance to a summer camp complete with archways and an insignia.

The courtyards are anchored by landscaped islands that reduce impervious surfaces and provide shade and screening. The color and surface treatment of the dwelling units blends in well with the integrated mature woodland. The short setbacks and sidewalk system located throughout the development create a link to other uses and a pedestrian-friendly atmosphere.



The design of the residential courtyards provides a neighborhood feel for residents of the Woodlands.



The preserved open space provides scenic views for residents in the Woodlands.

The most outstanding feature of this development is the landscaping and the preservation and integration of existing woodland. Although the largest area of open space is located in the northeastern corner of the tract, the woodlands envelop a large portion of the development and provide views from almost every dwelling unit. The tree canopy provides shade and continuity to the development layout. The landscaping and use of natural materials, such as the wooden lightpoles, throughout the Woodlands allow the development to live up to its name.



#### 322 Downingtown Pite 322 Bypass Strasburg Road 162 No

**Location** East Bradford Township

**Tract size** 277.45 acres

**Open space** 73% (201.54 acres)

**Number of units** 34 single-family units

**Year approved** 1996

### II: Parke Farm



Parke Farm is located in East Bradford Township just north of Route 162 off of Creek Road. The most outstanding feature of this development is immediately recognizable upon reaching the entrance to the access road. There are no large-scale signs or formal entrances, just a narrow access road that leads into the development along a hedgerow and a large rolling meadow. This layout creates the most effective roadside buffer of any cluster development included in this guide. The entrance looks more like the driveway to a private estate or horse farm than the entrance road to a development.

The dwelling units are not visible from Creek Road as they are located nearly one-quarter mile inside the development. The homes are fairly typical of single-family development in Chester County: large homes on 2-acre lots surrounded by expansive lawns. However, the layout of the homes and preservation and integration of natural resources is far from typical. The layout takes full advantage of the topography, existing



A view of the buffer looking back towards Creek Road.



The integration of mature woodland reduces the impact of residential development on the open meadow below.

woodland, and historic hedgerows. The lots in the northern portion of the development, adjacent to the woodland, integrate mature trees into the lot layout, reducing the impact of the development near the ridgeline. The lower cul-de-sac is thoughtfully laid out and nestled into the hollow. The well planned use of the topography also provides an effective screen between residential uses within the development.

The houses have side-load garages that reduce the impact of the garage doors on the facades of the dwellings. A trail system would have complemented the extensive internal open space and the views to adjacent farmland and natural resources. The absence of a sidewalk system is appropriate in this rural setting as is the lack of curbing.

The topography, existing woodland, preserved hedgerows, and thoughtful layout of this development provide a very effective screen to adjacent uses. Parke Farm provides an excellent example of 2-acre cluster development in Chester County. In addition, it provides proof that the implementation of design elements, as discussed in Chapter Three, can significantly enhance the layout of any cluster development.



#### **Location** East Bradford Township

**Tract size** 17.69 acres

**Open space** 79% (14 acres)

**Number of units** 70 townhouses

**Year approved** 1996

#### 12: Sagamore



Sagamore is located off of Route 52 in East Bradford Township about one-half mile southwest of West Chester Borough. The tight development pattern of the townhouses in Sagamore resulted in the preservation of 14 acres of open space, almost 80 percent of the original development parcel. The housing is situated along a narrow loop road that is accessed by a boulevard off of Route 52. Although the development and open space provide a buffer from the adjacent roadway, the topography of the site (the land slopes significantly immediately adjacent to Route 52) results in the townhouses being visible from Route 52. The remainder of the development is not visible from the adjacent roadway.

The dwelling units are attractive and pedestrian-friendly as a result of the facade treatment, landscaping, and short setbacks. Although sidewalks are located throughout the development, pedestrian circulation is interrupted in front of the townhouse buildings as a result of the driveway configuration. The driveways,



A link to the adjacent development promotes pedestrian circulation between neighborhoods.



A view of the loop road, sidewalk facilities, and housing layout of Sagamore.

despite their impact on sidewalk design, are thoughtfully designed and landscaped. The strip of driveway area located between the garage doors is landscaped rather than simply paved over as commonly found in townhouse developments. The landscaping is well executed and is supplemented by the preservation and integration of existing woodland.

The open space is located primarily around the perimeter of the development with a concentration of woodland in the northwestern and southwestern corners of the development, and within the loop road. This configuration provides a view into open space for almost every homeowner, and a centralized open area for recreation. At the northern most point of the development, a trail has been provided linking Sagamore to the sidewalk system of the adjacent development. This linked sidewalk system provides a facility that promotes pedestrian circulation, may reduce the need for additional vehicular trips, and expands the walking facilities available to residents of both communities.

Sagamore is an example of a higher-density development that benefited from the implementation of well thought out cluster design elements.



#### **Location** Westtown Township

**Tract size** 49.20 acres

**Open space** 71% (35 acres)

Number of units 252 apartments

**Year approved** 1996

## 13: The Jefferson at Westtown



The Jefferson at Westtown is located off of Route 202 in Westtown Township along Skiles Boulevard. The Jefferson at Westtown is the only apartment complex included in this tour and one of the few cluster developments located adjacent to commercial facilities. The layout of the Jefferson is fairly typical of an apartment community: large apartment buildings located along a single access road where on-street perpendicular parking is accommodated. The three-story luxury apartment buildings are large and were well designed with an attractive facade treatment. Although well-landscaped, until the trees mature the landscaping will not significantly soften the impact of the large buildings. In addition to parking stalls, there are several carport structures provided along the access drive and in the parking area. The impact of the parking facilities could be reduced with the inclusion of parking islands and additional street trees and other landscaping. Again, as the landscaping matures, these facilities will be better screened. Pedestrian facilities are provided in various portions of the development.

The area of preserved open space (35 acres) is located primarily behind the apartment buildings so it is not easily visible from the access road and the front of the development. The open space consists of large meadows and woodland and provides incredible views from the rear-facing dwelling units. The open space creates a very effective screen to adjacent residential uses to the north and east.

The Jefferson at Westtown is an attractive luxury apartment complex that has successfully preserved a very large area of open space (over 70%). The design could have been further improved by providing more residents with views of and access to the open space.



A view from the parking area, through a carport structure, into the rear open space area.



One of the attractive apartment buildings located at the Jefferson at Westtown.





**Location** Thornbury Township

**Tract size** 117.72 acres

**Open space** 87% (102 acres)

**Number of units** 1 single-family unit 70 townhouses

**Year approved** 1997

#### 14: The Greens at Penn Oaks



The Greens at Penn Oaks is located to the east of Route 202 in Thornbury Township within the Penn Oaks Golf Course. As its name and location imply, this is a golf course community. The traditional architectural design of the dwelling units is attractive and enhanced by the use of traditional lighting, short setbacks, and thoughtful landscaping. Although the facades of interior units have front-facing 2-car garage doors, the end units use side-load garage doors that reduce their visual impact. Every dwelling unit has a view of the golf course or the centralized area of open space.

Access management in The Greens is handled through the use of landscaped islands and culs-de-sac. Parking is primarily off-street with overflow parking being accommodated along those same landscaped islands. Sidewalk facilities are located throughout the residential areas along the access roadways. Pedestrian facilities, such as benches, create areas of interest for residents.



The architectural design is enhanced by design elements such as traditional street lighting and landscaping.



A landscaped circle reduces impervious surfaces and provides an area for a bench and sidewalk facilities.

The open space consists primarily of the Penn Oaks Golf Course that surrounds the residential subdivision. The golf course designers preserved a significant number of mature specimen trees, and two historic hedgerows just to the northwest of the residential uses. This preservation and integration of existing woodlands is also evident within the residential subdivision.

The Greens at Penn Oaks is another example of how attention to detail can result in a very attractive and pedestrian-friendly community.





**Location** Thornbury Township

**Tract size** 160.69 acres

**Open space** 52.2% (83.91acres)

#### Number of units

103 single-family units162 townhouses1 commercial use

**Year approved** 2001

## 15: Brandywine at Thornbury, Phase 1-5, 9



Brandywine at Thornbury is located just southwest of the intersection of Routes 202 and 926 in Thornbury Township. This large development was completed in phases and includes both single-family homes and townhouses. The single family homes encompass the largest portion of the developed area and are located in the western portion of the development parcel; the townhouses are set on the eastern portion of the development, along with a day care center adjacent to Route 202.

The open space stands out as an impressive feature of this development. Although the immature trees provide only a minimal buffer from Route 202, an impressive rolling hillside and stream were preserved on the western side of the development along Route 926. The stream's riparian buffer is the focal point of the single family development as it winds through the grassy meadow. The original historic home and barn were also

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Sidewalks, street trees, and short setbacks make walking to the development's recreation areas a practical option.



The preserved riparian buffer is the focal point of the development.



Used as a drip field for wastewater disposal, this rolling meadow and stream maintains the scenic viewshed of the Brandywine area.

incorporated into the layout of the single family homes, preserving a link to past. The townhouses are surrounded by mature woodlands in the center of the development.

The open space not only preserves scenic viewsheds along Route 926, but also provides a functional resource for recreation. Under the zoning regulations, 20 percent of the preserved open space was required to be active recreation. Thus, the development features two multi-use fields and tennis and basketball courts. A walking trail provides a passive recreational amenity.

With a strong emphasis on recreation, creating a pedestrian-friendly atmosphere was a priority in the development's design. Short setbacks in combination with sidewalks (on one side of the development's cartways) allow residents to walk to the development's numerous amenities, including a daycare center situated adjacent to Route 202. Street trees line most of the development's roadways and enhance the pedestrian-friendly atmosphere.

Brandywine at Thornbury is a great example of cluster development that features a variety of housing, multiple-use open space, and many amenities that can be enjoyed by its residents.





**Location** East Bradford Township

**Tract size** 190.27 acres

**Open space** 68% (129.21 acres)

**Number of units** 54 single-family units

**Year approved** 1996

## 16: Brandywine River Estates



Brandywine River Estates is located in East Bradford Township between Route 842 and Route 52 along the East Branch of the Brandywine Creek. This single family development is well hidden from Creek Road by landscaping and woodlands. Two landscaped signs are all that is visible from the entranceway. The naturally sloping topography was slightly graded to eliminate any visual impact that would compromise the rural character of Creek Road.

A tree-lined boulevard provides an inviting entrance into the development itself. The narrow cartway and street trees help to soften the presence of the development's large homes. Sideload garages also take the focus off of vehicular accommodations within the development.



Curving driveways and sideload garages create a unique suburban design that hides vehicular accommodations.



The walking trail at Brandywine River Estates allows residents to enjoy the areas of preserved open space.

The preserved open space is interspersed between the housing and also surrounds the perimeter of the tract. Much of the open space is preserved in its natural state, such as meadows, woodlands, and wetland. A circling trail provides a link for the residents to the open space as well as a source of passive recreation. Designed so as to not to be too intrusive, the trail is buffered from the back of the homes by planted evergreens where large setbacks were not feasible.

A section of the open space is used for the onsite spray irrigation waste water treatment facility. The spray field is buffered by the surrounding woodlands and is unnoticeable from the homes in the development.

The successful buffering techniques and interspersed open space make Brandywine River Estates a practical and feasible alternative to conventional residential development.





**Location** Birmingham Township

**Tract size** 136.73 acres

**Open space** 54% (73.62 acres)

**Number of units** 96 single-family units 96 townhouses

**Year approved** 1993

#### 17: Birmingham Hunt, Phase I



Birmingham Hunt is located between South New Street and Route 202 in Birmingham Township. This development can be fully appreciated once one realizes that the parkland that lies just across New Street was permanently preserved as a result of this subdivision.

The layout of this development preserved the majority of the open space on the western half of the parcel, thus minimizing the impact of the housing on the surrounding open space and farmland. This development serves as an example of connectivity between compatible neighboring uses. Furthermore, the layout allows a network of open space to thrive on the western half of the subdivision, which is a key element recommended in the County's open space plan, *Linking Landscapes*.

With the majority of the development's open space dedicated to preserving the site of the Sandy Hollow Battlefield, now a Birmingham Township park, the homes could not be provided with substantial setbacks from New Street. The development does, however, successfully screen both the noise and visual impact of Route 202 by using the topography to its advantage. Furthermore, the original historic home, which sits along New Street, was preserved.

Contributing to the development's character, the houses (both single family units and townhouses) are placed close to the narrow, tree-lined cartway, creating a pedestrianfriendly scale. In addition, the inclusion of an extensive trail system and interspersed open space define a unique suburban character.

A township sewage treatment facility, constructed in conjunction with the subdivision, allowed the houses to be clustered away from the large, preserved riparian buffer. The development's trail system provides a link to this open space as it winds along the riparian buffer, wetlands, and common green spaces. The residents can also enjoy the adjacent walking path and beautiful scenery provided by the Sandy Hollow Battlefield site.

When consideration is given to this development's preservation of a battlefield and the numerous design challenges that it overcame, Birmingham Hunt is a unique example of cluster success along the suburban fringe.



An extensive trail system links the development's residential area and open space.



A preserved riparian buffer creates natural views between townhouse clusters.



**Location** Birmingham Township

**Tract size** 132.77 acres

**Open space** 59% (78.33 acres)

**Number of units** 55 single-family units

**Year approved** 1993

### 18: Reserves at Chaddsford



Reserves at Chaddsford is located in Birmingham Township about one quarter mile north of Route 1 off of Creek Road (old Route 100). The entrance from Creek Road is subdued and attractive as a result of the topography of the site, preservation of woodland, and landscaping. The curvilinear entrance drive slopes gently upward through the mature woodland into this one-acre lot subdivision. The layout of the Reserves at Chaddsford is uncomplicated, consisting of a single access road with a large loop at the end with single family homes on either side.

The access road is narrow, reducing the amount of impervious coverage, and gracefully winds through the subdivision. Stormwater management facilities in the development are well landscaped and screened and blend into the open space areas.

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The open space to the south of Masters Way provides views of a mix of meadow and woodland for adjacent homes.



Open space areas on the adjacent parcel create spectacular views for homeowners at the end of the spur road.

The preserved open space is located primarily along the perimeter of the development. Homes located along the northern border are flanked by areas of mature woodland. The individual lots on the southern edge of Master's Way between the entrance and the loop are surrounded by a large area of mature woodland. This area of open space, which drops off steeply from the road, is maintained in meadow and provides views from the adjacent dwelling units. Within the loop, a small area of open space creates a separation from interior dwelling units. A small spur road is located at the close of the loop that ends at the southern boundary of the tract. Homes located at the end of this spur road enjoy a view into the open space of the adjacent tract.

The Reserves at Chaddsford successfully creates an effective buffer to and from adjacent uses. The addition of an informal pedestrian circulation system, such as a trail through the extensive open space areas, would further enhance this cluster development.



**Location** Pennsbury Township

**Tract size** 13.37 acres

**Open space** 58% (7.73 acres)

**Number of units** 4 single-family units

**Year approved** 1999

#### 19: Oakdale



Oakdale is located in Pennsbury Township, north of Route 1. This development features four single family homes situated along a small access road which is well hidden from the roadway. The large setback and use of open space as a buffer preserve the rural character of Chandler Road. The open space includes a preserved pond, stream, and riparian buffer.



The treatment of the stormwater management facility and mature woodland enhance the layout of this small subdivision.

Within this small subdivision, the houses are integrated into the existing woodland. The preservation of mature woodlands, instead of large front yards, reduces the maintenance costs and environmental impacts associated with expansive, manicured yards. By featuring sideload garages, the housing design focuses on maintaining rural character and traditional architecture.

Oakdale is an example of a cluster development on a smaller tract that preserves rural character and valuable environmental features.



**Location** Valley Township

**Tract size** 103.62 acres

**Open space** 52% (54 acres)

**Number of units** 64 single-family units 92 townhouses

**Year approved** 1988

## 20: Country Club Valley



Country Club Valley is located in Valley Township east of Country Club Road, just south of the Route 30 Bypass. Upon entering the development from Country Club Road, the treatment of the stormwater management facility stands out as an example of the attention to detail given to certain design elements. The pond is planted to resemble a farm pond or swimming hole, hiding its use as a stormwater management facility. The narrow roadway leads into the townhouses which encompass the western half of the development tract. The surrounding and interspersed areas of open space provide a connection for most of the townhouse units. The treatment of the open space areas is a mix of mowed lawn and wildflower meadow. One drawback in the design is several townhouses are situated in close proximity to Route 30 with only a narrow area of woodland separating the houses from this busy highway.

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The single-family dwelling units encompass the eastern portion of the development tract. The average lot size is less than one acre and almost every home overlooks the areas of open space. The use of landscaped islands and culs-de-sac is present throughout the development, reducing the amount of impervious coverage. Side-load garages were used in some of the homes, reducing the visual impact of garage doors from the street. The short setbacks and narrow lot width create an appropriately-scaled streetscape and the absence of curbing and interspersed areas of open space help to create a rural setting

Country Club Valley is an attractive development enhanced by the attention to detail that was given to the treatment of their stormwater management facilities and landscaping. Improvements to the pedestrian circulation facilities, in the form of sidewalks or trails, would further enhance this development.



Areas of meadow and woodland create views for townhouse residents in Country Club Valley.



Side-load garages reduce the visual impact of garage doors on the house facades.



**Location** Pocopson Township

**Tract size** 61.20 acres

**Open space** 80.7% (49.4 acres)

**Number of units** 33 triplex units

**Year approved** 1986

#### 21: Tullamore



Tullamore is located in Pocopson Township off of Route 926, about one mile west of the Brandywine Creek. This small development consists of two culs-de-sac connected by one narrow cartway. A large rolling meadow makes this development unnoticeable from Route 926, and provides a buffer between Tullamore and surrounding residential development. By allowing the meadow to remain in its natural state, the rural character of the area is not compromised. This vast area of natural meadow is also a positive example of alternative ground covers as discussed in Chapter Three, page 110. The housing units, which feature three dwellings per unit (triplex), are unobtrusive in terms of their architecture and further preserve the rural character. The homes' subdued grey exterior and mature landscaping soften their visual impact on the surroundings. Many of the units enjoy a view of both the rolling meadow in the front half of the development and the woodlands in the rear. Landscaped islands and the large areas of preserved woodlands further contribute to the rural character of this development.

An obvious strength of Tullamore is that its design was sensitive to the rural nature of its surroundings. The development does not feature many design elements that are common in suburban areas, such as sidewalks and curbs-those elements would have been out of context in this rural setting. Tullamore focuses on preserving large amounts of open space, the existing rural character, and natural features of the site.



Clustering the homes onto one side of the roadway allows most residents to view both the meadow and woodlands.



Naturalized meadow, as an alternative ground cover, has numerous benefits such as improved storm water infiltration.



**Location** Pocopson Township

**Tract size** 36.10 acres

**Open space** 83.1% (30 acres)

**Number of units** 18 twins

**Year approved** 1980

#### 22: Coniston



Coniston is located north of Route 52 just to the west of the intersection of Locust Grove Road and Haines Mill Road in Pocopson Township. The development's eighteen twins are clustered on only six acres, leaving 30 acres as preserved open space. With a lack of public utilities, the development uses a community well and two tile drainage fields which are unnoticeable in the open space. Although the residents do not have large yards, they enjoy a sensational view of the rolling hillside below.

Short setbacks, used in combination with a lack of curbing and a narrow cartway, preserve the rural character while creating a pedestrian-friendly atmosphere. In addition, centrally located mailboxes serve as a focal point to pedestrian circulation. These elements create a strong sense of community within the development. The livable scale of the community is complemented by a housing design that is diverse and varied from one twin to the next. The conservative color of the twin units minimizes their visual impact along the scenic ridgeline. The homes successfully blend into the ridgeline by being integrated into the surrounding mature woodlands.

A small sign creates an appropriate low-key entrance into this small, intimate development. The modest nature of the entrance, in addition to the mature woodland along Haines Mill Road, ensures that the rural character of the road is not compromised. Adding landscaped islands to the development's two culs-de-sac would have further enhanced the natural character created by the mature vegetation and reduced impervious surface coverage.

Constructed in 1980, this development stands as a benchmark of cluster development's early success in Chester County. Coniston defines the potential of cluster development in rural communities where public utilities are not available.



The mature trees and narrow cartway preserve the rural character of Coniston.



Naturalized meadows like this preserve wildlife habitat as well as create scenic views for residents.





**Location** Kennett Township

**Tract size** 69.40 acres

**Open space** 50.2% (34.90 acres)

**Number of units** 36 single-family units

**Year approved** 1984

## 23: Southridge



Southridge is located in Kennett Township, about three miles south of Kennett Square just off of Route 82. Driving by the entrance to this development on Marshall Bridge Road, it appears to be a small rural road. The development is only recognizable by the split rail fencing which lines Marshall Bridge Road and displays the name "Southridge" in small letters. The entranceway into the development is also lined with split rail fencing surrounding a large meadow and stream. These rural design elements enhance the scenic quality of Marshall Bridge Road.

Only after crossing the bridge over the Red Clay Creek do the homes become visible. Integrated into the mature woodlands, most of the homes are located around landscaped culs-de-sac. These small clusters of homes create a community atmosphere within themselves. While providing a central area for residents, the landscaped turnarounds provide shade and reduce impervious coverage.



A defining feature of Southridge is the stable-like garages.



Abundant areas of open space combined with mature landscaping create a unique environment at Southridge.

The unobtrusive color and design of the houses give this development a distinctive character. A unique and noticeable element to the housing is their garages, which have the appearance of horse stables. The garages complement the architecture of the houses, which is also sensitive to the preservation of the natural setting. Each of the homes has an impressive view of the surrounding meadows and woodlands.

The open space is used primarily to buffer one cluster of houses from the next cluster. The surrounding open space, consisting of woodlands and meadows, successfully screens the development from neighboring residential uses.

By applying the design elements described in Chapter Three, Southridge is an excellent example of how clustering homes can create a desirable community as well as preserve sensitive resources in a rural environment.





**Location** Kennett Township

**Tract size** 120.40 acres

**Open space** 74% (89 acres)

**Number of units** 31 single-family units 24 townhouses

**Year approved** 1983

### 24: Ponds at Woodward



The Ponds at Woodward is located in Kennett Township about one mile south of the intersection of Route 1 and Route 52. The entrance to the Ponds from Route 52 is subtle and elegant; defined by a lawn in the foreground and street trees along the narrow access roadway. The access road turns towards the south and is bordered on the left-hand side by a large area of meadow. Two groupings of three townhouses are located on the right-hand side of the road just before the orchards come into view. The remaining townhouses are located in the southwestern corner of the development.

The single-family homes are located in the northern portion of the development near the entrance from Hillendale Road. The attention to detail and facade treatment of all of the dwelling units are very apparent.

This design quality is continued in the treatment of street lighting fixtures, signage, and landscaping.

The namesake of the development, the ponds, creates a spectacular backdrop to the townhouse design in the southeastern corner of the development (see aerial). The orchards, which comprise almost the entire southwestern portion of the tract, create views from almost every vantage point. The preserved farmhouse and associated farm buildings within the orchard only add to the charm of this use. Every dwelling unit in the Ponds at Woodward has a view into the orchards, the ponds, and/or the woodland near the intersection of Hillendale Road and Route 52.

The Ponds at Woodward is an example of how attention to detail and the maintenance of existing uses and character can result in a unique and charming community.



The mature trees and ponds provide views and reflect the attention to detail typical of this development.



The orchards provide a rural backdrop to the attractive facade treatments of the single-family homes in the Ponds.





**Location** Penn Township

**Tract size** 68.89 acres

**Open space** 52% (35.48 acres)

**Number of units** 154 single-family units

**Year approved** 1998

## 25: Villages at Penn Ridge, Phase I



The Villages at Penn Ridge is located about one half mile east of the intersection of Route 796 and Old Baltimore Pike in Penn Township. With the exception of the landscaped entrance, the development is completely buffered by the woodlands that line Old Baltimore Pike. The development's open space, consisting of woodlands and wetlands, screens the houses from adjacent uses.

Within the development, a tree-lined boulevard, accented by attractive street lighting, creates an impressive entranceway. The village-scale homes on ½ acre lots are situated around a series of landscaped islands and pocket parks. A noticeable difference between these houses and conventional development is a varied design from one home to the next; the homes vary in architecture, orientation, and use both front and side-load garages.



A landscaped "eyebrow" like this provides green common space as well as visitor parking.



The backyards of many of the dwelling units provide immediate views to the preserved open space.



Sideload garages allow the architecture to become the focal point, rather than the vehicular accommodations.

This development features an extensive pedestrian circulation pattern which utilizes the common green space areas. The centrally located clubhouse also brings purpose to this well designed element of the community. The combination of the circulation pattern with short setbacks and landscaped boulevards indicates that creating a comfortable pedestrian scale was a priority in this development's design.
# **Chapter Three Getting What You Want** Implementing Good Design Features





# Using Ordinances to Encourage Good Design

Although using ordinance regulations to achieve good design is an inexact science, certain basic ordinance standards should be in place to allow for and encourage good design. The primary means of regulating cluster subdivisions is through the municipal zoning ordinance and subdivision and land development ordinance. Because the intent of this Design Guide is to focus on cluster subdivision design, only those standards relating to design issues are presented in this chapter.<sup>1</sup> In some cases, the design standards suggested are applicable to any type of subdivision or land development and should be included in the general design standards of the ordinance.

Design standards are generally located in the subdivision and land development ordinance for greater flexibility while the use standards are located in the zoning ordinance. There may be cases where a municipality wants to include some or all of the standards in the zoning ordinance. If the cluster subdivision is a conditional use, including the design standards in the zon-ing ordinance is less of an issue because the governing body will have some flexibility in applying them or including additional conditions. If the cluster subdivision is permitted by right, locating the design standards in the subdivision and land development ordinance would avoid the need for variances and the involvement of the zoning hearing board.

Although it is not possible to legislate good design, the following standards will at least allow for it to happen and push the applicant's design in the right direction. To further ensure good design, a municipality should consider retaining a land planner or site designer to work with the applicant when a major cluster subdivision is proposed.

Appendix B provides the basic outline of a full cluster subdivision ordinance.

### How This Chapter is Organized

Chapter Three is organized into four major categories: open space; natural features; vehicular facilities; and pedestrian facilities. Within these four categories sixteen specific preferred design elements and related ordinance considerations are discussed. The design element sections also include:

- Sample ordinance language.
- A list of cluster developments exhibiting positive examples.
- Sources of information.





#### **Open Space**

- **69** Maintain Existing Character Open space uses for pasture, farmland, orchards, and woodlands
- 74 Protect Scenic Views Setbacks and screening from existing roads
- **81** Preserve Existing Views
- **83** Preserve Historic Resources

The location of the open space, appropriate uses for the protected open space, and the protection of existing scenic views are considered among the most important in creating a well designed cluster subdivision. Incorporating historic resources into the open space is also an important design consideration covered in this section.



An equestrian facility is operated in a cluster development in northern Chester County.

# Maintain Existing Character Open space uses for pasture, farmland, orchards, and woodlands

#### **Design Element**

In rural areas in particular, maintaining the open space in its current use can be a major factor in preserving the character and landscape of the community. Removing a specimen tree or converting a pasture to manicured lawn significantly changes the characteristics of the site and the surrounding area. Preserving a notable existing feature and integrating it into a residential development plan can reduce the impact of new development and preserve the character of the site and community.

#### **Ordinance Considerations**

Ordinance standards should set the priorities for the use of open space, indicating a hierarchy of most desirable uses. Specific uses permitted in the open space should be spelled out in the ordinance. Requirements for the size and shape of the open space should be included to ensure that the land provided is viable open space, whether used for active or passive purposes. Finally, the ordinance should state the specific uses that are not permitted in the open space. Under limited circumstances a structure may be permitted within the open space (e.g., a barn on historic structure) but the footprint of the building should not be counted towards the open space requirement. The open space standards should be located within the article regulating cluster subdivisions in the zoning ordinance.

The following language was adapted from the Natural Land Trust's (NLT) *Growing Greener* Workbook and provides guidelines for identifying the most desirable locations for the open space. These ordinance standards cover preferred purposes of the open space (priorities for preservation), permitted uses, prohibited uses, and the configuration of the open space. The "Four-Step Design Process" used in NLT's *Growing Greener* program emphasizes identifying the open space first, followed by the house sites, streets, and lot lines. (For a full description of the NLT Four-Step Design Process, and open space standards, consult the references on page 73.)

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Maintain Existing Character



This area of open space preserved habitat area for birds and other wildlife in Coniston.



Residents of the Ponds at Woodward enjoy a view of orchards operated within the development.



An historic farmstead was preserved as an open space use in Pickering Glen, just outside of Phoenixville.

#### Sample Ordinance Language for Open Space Uses and Design

#### **1. Preferred Purposes of Open Space**

Areas designated for open space shall be configured as far as possible to meet the following purposes in the order listed:

- a. Maximize the conservation of site features identified as having particular environmental, historical, or recreational value, including: steep slopes, floodplains, watercourses, wetlands, mature trees or specimen vegetation, areas included in the Pennsylvania Natural Diversity Inventory, woodlands, hedgerows, historic sites or structures, and other noted landscape features as identified in the Open Space, Recreation, and Environmental Resources Plan.
- b. Minimize intrusion upon public and private views, on and off the site. To the maximum extent possible, the open space shall be configured so that the view of the built portion of the proposed subdivision from public roads is minimized. The post-development view of the site from the road should be as similar to the pre-development view as possible.
- c. Provide links to open space or recreation areas on abutting parcels, including pedestrian trails, to create linked pathway corridors in the township. Open space shall be

configured so that it is adjacent to or directly across the street from as many of the subdivision's residential lots as possible.

- d. Implement applicable open space and recreation plans of any federal, state, county, or regional organization, local municipality, or recognized private organization to complement and extend such resources in the township, where such plans are deemed to be acceptable and desirable to the township. Open space may also serve the purpose of providing buffers or transitional areas between the subdivision and adjoining parks or protected lands.
- e. Improve accessibility for the general public to the recreational facility or open space resource and promote its use among residents. To meet this purpose, pedestrian pathways shall be provided, where deemed appropriate by the township, to provide the potential for interconnecting pathway and sidewalk systems in the township.
- f. Preserve agricultural uses and Class I, II, and III agricultural soils as defined by the U.S. Department of Agriculture.



Portions of the Brandywine Battlefield were preserved within the open space of Birmingham Hunt creating a community amenity and link to the area's past.

#### **Cluster Developments Exhibiting This Design Feature**

- 2: Kimberton Greene, p. 16
- 3: Pickering Glen, p. 18
- 4: Charlestown Hunt, p. 20
- 5: Waynesborough Woods, p. 22
- 6: Deerfield Knoll, p. 24
- 8: Pinebrooke Village, p. 28
- 9: Uwchlan Woods at Williamsburg, p. 30
- 11: Parke Farm, p. 34
- 15: Brandywine at Thornbury, p. 42
- 16: Brandywine River Estates, p. 44
- 17: Birmingham Hunt, p. 46
- 18: Reserves at Chaddsford, p. 48
- 19: Oakdale, p. 50
- 20: Country Club Valley, p. 52
- 21: Tullamore, p. 54
- 22: Coniston, p. 56
- 23: Southridge, p. 58
- 24: Ponds at Woodward, p. 60

Note:

The municipality may

want to require that

feet from the nearest residential lot

active recreation areas

be set back at least 100

#### 2. Permitted Uses in the Open Space

Plans shall designate the use of open space and the type of maintenance to be provided. In addition to any of the uses meeting the purposes listed above in Subsection 1 as determined by the township, the use of common open space may include the following:

- a. Woodlands, meadows, watercourses, floodplains, wetlands, steep slopes, or similar conservation areas or wildlife habitat maintained in its natural state.
- b. Park or outdoor recreation areas, including existing or proposed trails and other lowimpact passive recreation uses.
- c. Active recreation areas, such as playgrounds, fields, and courts, provided such areas do not consume more than fifty (50) percent or a maximum of five (5) acres of the required minimum open space.<sup>1</sup> The minimum pervious parking areas necessary to serve these uses shall be permitted in the

open space. Active recreation areas shall be located so as to have the least impact on adjacent residential uses.

- d. Agricultural uses including crop or pasture land and the cultivation of nursery stock or orchard trees. Structures specifically serving and associated with these uses may be located in the permanent open space. However, the footprint of the structures shall not be counted towards the minimum required open space. Intensive agricultural uses shall not be permitted.
- e. Historic structures serving the purposes of Subsection 1.a. above may be located in the permanent open space. However, the footprint of the building and any associated outbuildings or impervious surfaces shall not be counted towards the minimum required open space.
- f. Land or spray application of treated waste water solely from the tract development or, where applicable, that portion of the storm water management facilities determined to be eligible as open space (i.e., retention ponds, see Subsection 3.c below).
- g. Easements for drainage, access, sewer or water lines, wells, and underground utility rightsof-way. Above ground utility or street rightsof-way may traverse the open space but shall not count towards the minimum required open space.

<sup>I</sup> Natural Lands Trust's (NLT) *Growing Greener* model language suggests these numbers, but they can be modified based on the needs and desires of each municipality.

### 3. Uses that Cannot Count Towards Open Space

Land occupied by the following uses may not be counted towards the minimum required open space although, if listed above in Subsection 2, the use may be permitted to be located within an open space area.

- a. Impervious parking areas.
- b. Sewage or water treatment facilities (except land or spray application).
- c. Structural development, including buildings and stormwater management basins, spillways, and level spreaders, shall not be calculated as part of the minimum required common open space area. Certain facilities, such as stormwater recharge facilities designed as permanent retention ponds, may be allowed to count towards open space requirements if the board of supervisors determines they would enhance or be consistent with the intent of the open space provisions.

#### **4. Limits on Constraints in the Open Space** No more than sixty (60) percent of common

open space shall be comprised of floodplains, wetlands, and steep slopes in excess of twenty five (25) percent.

## 5. Limitations on Size and Shape of Open Space

Where open space is designated as separate, noncontiguous parcels, no single parcel shall be less than ten-thousand (10,000) square feet in area. In addition, the ratio of the longest to shortest dimension of an open space parcel shall not exceed five (5) to one (1). Exceptions to these standards are permitted where a portion of the open space is:

- a. A connecting strip between larger open space parcels, or a trail or portion of a trail network, in which case the minimum horizontal dimension shall be twenty (20) feet.
- b. Contiguous to a watercourse.
- c. Connects or includes sections designated on the "Recreation Lands and Facilities Plan" map of the Open Space, Recreation, and Environmental Resources Plan.

### Additional Sources of Information

"Conservation Easements and Local Land Trusts," Tool #27, Community Planning Handbook, Volume I, CCPC, 1997. (Option for permanent protection of open space.)

Growing Greener: A Conservation Planning Workbook for Municipal Officials in Pennsylvania, prepared for the Pennsylvania Department of Conservation and Natural Resources by the Natural Lands Trust, Media, PA, September 2001.

North Coventry Zoning Ordinance, Article XIV, Residential Design Options, and North Coventry Subdivision and Land Development Ordinance, Section 630, Design Process for Conservation and Open Space Subdivisions, and Section 631, Open Space/Protected Lands Review Standards, adopted December 2002. (The township adopted a version of the Growing Greener standards.)



The entrance to Parke Farm takes full advantage of the topography and existing hedgerow to significantly reduce the impact of the development on adjacent uses.

# **Protect Scenic Views** Setbacks and Screening from Existing Roads

#### **Design Element**

The use of the open space to screen some or all of the views of new buildings that would otherwise be seen from the existing road is one of the key design features of a successful cluster subdivision. When the open space is used to its best advantage, the built portion of the site is virtually invisible from public view points and the existing character of a rural area is preserved.

#### **Ordinance Considerations**

Existing site conditions on some tracts will not always lend themselves to setbacks and screening, but when they do, the ordinance standards should guide the layout towards this design. Use of this technique is particularly important where the municipality has identified scenic viewsheds in its open space or comprehensive plan. If a more natural setting is to be maintained, the use of berms for screening purposes should be discouraged.

Configuring the open space so that it buffers the view of the built portion of the site can be partially addressed through Subsection 1.b of the sample ordinance language for the open space design standards on page 71. That section of the design standards places a high priority on minimizing the view of new development as seen from public roads. Four additional methods for protecting scenic views are listed below.



#### **Comparison of Setbacks From Existing Road**

The top image illustrates a typical treatment of an entrance to a new subdivision under construction. The understory and shrub layer of existing woodland have been removed or thinned out as well as a significant amount of the canopy layer to make way for the building envelopes and the entrance drive.

The lower image represents the entrance to a new subdivision where the visual impact of new development is greatly reduced. The residential uses are screened by a dense area of existing woodland and the entrance drive is clearly represented without significantly impacting the rural nature of the area adjacent to the existing road.





Mature evergreens and a winding access road provide a buffer to this residential neighborhood.

This area of open space in Kimberton Greene creates a buffer to the adjacent roadway.





**Open Space** Protect Scenic Views

#### **Ordinance Considerations for Protecting Scenic Views**

### Location of Houses in Relation to Open Space

The following general statement can be included in the section of the cluster subdivision ordinance that applies to the configuration of the houselots on the site: Increased Setbacks

Greater setbacks can be required from abutting external road rights of way. For example, while the subdivision ordinance may require a setback of only 25 to 35 feet for a house abutting a new internal road, a setback of 75 to 100 feet can be required for existing external roads adjacent to the proposed subdivision.



Open space and trees screen the residential uses in Charlestown Hunt from the exterior road.

"Views of houselots from exterior roads and abutting properties shall be minimized by the use of changes in topography, existing vegetation, or additional landscaping which meets the landscaping and screening requirements of Section \_\_\_\_\_ of the Subdivision and Land Development Ordinance."



An extensive area of lawn, a rustic fence, and flowering trees create an elegant entrance to the Ponds at Woodward.



The increased setbacks along this busy road provide an excellent buffer for the residents of Waynesborough Woods.

#### Design Standards for the Protection of Scenic Views

The West Sadsbury Township Zoning Ordinance (1996) contains provisions for scenic road protection that could be applied to cluster subdivisions. The protection standards apply to roads that have been identified as scenic by the township either in their comprehensive plan, open space, recreation, and environmental resources plan, or by resolution adopted by the township supervisors. The ordinance includes provisions for a "scenic inventory" to be performed by the applicant for the proposed development site and design guidelines to be used when developing the site. Provisions from the West Sadsbury ordinance useful to protecting scenic views in a cluster subdivision are described below. For a full copy of the Scenic Road Protection Standards, see Part 8E of the West Sadsbury Zoning Ordinance.

#### Scenic Inventory and Design Guidelines

The requirements for the scenic inventory in the West Sadsbury Township Zoning Ordinance are described in Section 1. Based on that information, the applicant must address the issues in Section 2. The ordinance further stipulates design guidelines in Sections 3 and 4.

- 1. The applicant shall perform a scenic inventory which shall:
  - a. Roadway viewshed and location of scenic resources that will be affected by development of the site.
  - b. Important view sight lines from the roadway that should remain open to the scenic resources identified in Section a.
  - c. Existing screening that could be preserved or intensified to conceal new development such as tree rows, woodlots, mature landscaping plant masses, walls and fences, and existing buildings or structures.
  - d. The site vicinity characteristics that are desirable to simulate, such as building architecture, construction materials and color, and native vegetation.
- 2. From the inventory information above, the applicant shall determine:
  - a. Areas outside of the viewshed where development will be located.
  - b. Critical visual areas that will remain open so scenic resources can be seen from the best viewpoint.
  - c. Less critical visual areas within the viewshed where development can be placed if the area outside of the viewshed is inadequate. These areas are to be located to the side of the critical views or behind existing or proposed screening.

- 3. Improvements such as buildings, structures, and parking areas shall be located to minimize the impact on scenic views and the disturbance of natural features.
- 4. The following design guidelines shall be followed when developing the site.
  - a. Building design and siting are to lessen the contrast with the landscape, e.g., siting buildings in the lower portion of the site.
  - b. Natural screening is to be used or extended to screen buildings and other improvements. Where possible, improvements are to be located behind woodlots or tree rows, or new woodlots or tree rows.
  - c. New plantings in landscape screenings are to be native species and arranged in a density and groupings that appear to occur naturally.
  - d. New buildings are to use architecture, construction materials, and colors consistent with the desirable characteristics of existing buildings on the site.

#### Specific Screening and Landscaping Requirements

Additional screening may be necessary when buffering cannot be fully achieved through the configuration of the open space. While 100 percent screening is not necessary, the view of new development should be softened and minimized to the extent possible. The West Sadsbury standards indicate that additional landscaping may be required to achieve the desired screening, but specific standards are not included. The following ordinance language is very specific in the amount of planting that is required for the preservation of scenic views.

The planting requirements on page 80 are adapted from the Scenic Corridor Overlay District standards of Greensboro, North Carolina and are only intended as an example of how planted buffer requirements can be implemented to protect a scenic roadway. A municipality contemplating the implementation of such standards should work with a landscape architect to ensure that the planting requirements are appropriate to the needs and characteristics of their community.

#### Cluster Developments Exhibiting This Design Feature

2: Kimberton Greene, p. 16 4: Charlestown Hunt, p. 20 5: Waynesborough Woods, p. 22 6: Deerfield Knoll, p. 24 9: Uwchlan Woods at Williamsburg, p. 30 11: Parke Farm, p. 34 14: The Greens at Penn Oaks, p. 40 16: Brandywine River Estates, p. 44 18: Reserves at Chaddsford, p. 48 19: Oakdale, p. 50 20: Country Club Valley, p. 52 21: Tullamore, p. 54 22: Coniston, p. 56 23: Southridge, p. 58 24: Ponds at Woodward, p. 60

### Additional Sources of Information

Scenic Roads Handbook, Local Government Handbook #3, CCPC, 1984.

"Scenic Road Overlay District," Tool #59, Community Planning Handbook, Volume II, CCPC, 1999.

Scenic Corridor Overlay Districts, Greensboro Planning Department, City of Greensboro, North Carolina, last updated November 2002.

West Sadsbury Township Zoning Ordinance, Part 8E, Scenic Road Protection Standards, 1996, last updated 2002.

#### Scenic Overlay District Buffer Requirements

The following buffer requirements shall be maintained along any portion of the tract adjacent to the existing right-of-way:

- 1. A natural undisturbed buffer, a minimum of twenty-five (25) feet wide and a maximum of fifty (50) feet wide, with an average width of thirty (30) feet, shall be maintained. If there are no existing canopy or understory trees in the buffer area, the following planting rates shall apply. If existing canopy or understory trees in the buffer area do not satisfactorily provide screening that would be similar to that achieved by the planting rates, then supplemental canopy or understory trees shall be required as determined by the township, upon the advice of a landscape architect. The following planting rates per one hundred (100) linear feet shall be required:
  - a. Five (5) canopy trees; and
  - b. Eight (8) understory trees.
- 2. A secondary natural undisturbed buffer meeting the following standards shall be maintained for a distance of two hundred (200) feet along any proposed street intersecting with the existing street.
  - a. The two hundred (200) foot distance requirement shall be measured from the intersection of the rights-of-way, however, the secondary buffer width and planting

rate shall begin at the termination of the buffer along the existing road.

- b. The width of the secondary buffer shall proportionately decrease from thirty (30) feet at its inception to eight (8) feet at its termination with the following planting rates:
  - 1. One (1) canopy tree per six hundred (600) square feet of buffer area; and
  - 2. One (1) understory tree per three hundred seventy-five (375) square feet of buffer area.
- 3. Trees shall be planted a minimum of ten (10) feet, but no more than fifty (50) feet, from other trees.
- 4. No development, including improvements, buildings, structures, or parking areas shall be allowed within the buffer. Streets or easements may be permitted to cross the buffer when necessary for access or utilities.



The layout of Charlestown Hunt provides areas of open space and preserved views into the meadow and woodland.

# Preserve Existing Views

#### **Design Element**

The preservation of scenic views when looking from the site towards the surrounding countryside should be another design goal for cluster subdivisions. Views should not be blocked by the location of proposed houses, but should be incorporated into the design where possible for the enjoyment of the subdivision's residents.

#### **Ordinance Considerations**

In the previous ordinance examples, the emphasis has been on preservation of the view for those looking from the existing road as opposed to the views seen from the development. Where the two scenic view goals are at odds, preservation of the existing landscape and views as seen from adjacent roadways should take precedence. Views looking from the site should also be considered but, in some cases providing a better view for residents could work to counter the preservation of the existing scenic landscape. For example, placing the new houses on top of a ridgeline and removing vegetation might provide a more scenic view for the new residents, but should never be considered as an option.

In order to document and protect views from the site, a requirement to that affect could be added to the "Scenic Inventory" requirements described in the preceding section (see page 78). The applicant would then be required to take those views into consideration in the overall site design. Again, the design guidelines should make clear that public views onto the site are the highest priority, while views seen from the site looking towards the existing road are of secondary importance.

#### **Cluster Developments Exhibiting** This Design Feature

1: Ridgelea, p. 14

- 4: Charlestown Hunt, p. 20
- 7: Marsh Harbour, p. 26
- 11: Parke Farm, p. 34
- 14: The Greens at Penn Oaks, p. 40
- 15: Brandywine at Thornbury, p. 42
- 16: Brandywine River Estates, p. 44
- 17: Birmingham Hunt, p. 46
- 18: Reserves at Chaddsford, p. 48
- 21: Tullamore, p. 54
- 22: Coniston, p. 56
- 23: Southridge, p. 58
- 24: Ponds at Woodward, p. 60
- 25: Villages at Penn Ridge, p. 62



The preservation of over 80% open space in Coniston made spectacular views like this one possible.



Views into the surrounding woodland and meadows enhance the community in the Reserves at Chaddsford.



This historic farmhouse, which provides character and lends to the sense of community, was preserved as a residential use in Marsh Harbour.

# Preserve Historic Resources

#### **Design Element**

The preservation of historic buildings and features can be encouraged by allowing their inclusion in the open space and allowing for expanded uses within the structures. Historic buildings could be used for several purposes in the subdivision including public uses (e.g., community meeting place), commercial establishments (e.g., bed and breakfast), residential uses, or the building could continue in its original capacity (e.g., farmhouse). Where a farmhouse is preserved, permanently protected agricultural land could be divided off with the house and counted towards the open space requirement. Maintaining the open space around historic structures preserves the historic landscape and context, contributing to a more meaningful preservation effort.

#### **Ordinance Considerations**

The zoning ordinance can include incentives for the preservation of historic structures on the site. For example, a use that might not otherwise be allowed in the zoning district, such as an office or antique shop, could be permitted in the historic structure in exchange for its preservation. Allowing an additional new dwelling unit (or not counting a dwelling in an historic resource towards the total permitted units) could also serve as an incentive. Incentives for the preservation of historic structures can be incorporated into the ordinance so that it applies to the entire municipality, not just in cluster subdivisions.

The sample ordinance language included in "Open Space Uses and Design," on page 72 ensures that historic resources are a permitted use in the open space. Preservation of historic structures is also listed as a priority in determining the preferred location of the open space.

The following language is written to apply to all municipal historic resources, but could easily be modified so that it applies only to cluster subdivisions. This approach requires that historic resources be defined in order to determine whether they qualify for the incentives. A fairly simple method for defining resources is included in the sample ordinance on page 85.

The sample language provided on page 85 is an Historic Preservation Overlay District in a municipal zoning ordinance. The full district provisions are not included, but could also be considered if the municipality wants to implement a broader preservation program. These full district provisions would cover other historic preservation issues, such as delay of demolition, in addition to allowing a broader range of uses in historic resources. The list of permitted use opportunities, maximum square footage, and number of employee requirements in the ordinance, should be tailored for each municipality. In rural areas, a more limited range of uses might be appropriate. The ordinance language also allows for the modification of area and bulk regulations through the conditional use process if it promotes the preservation of an historic resource.



This historic use was rehabilitated and preserved and now serves as an on-site office for an apartment complex.



This historic barn was integrated into the new development at Brandywine at Thornbury and creates a link to the past.

#### Sample Ordinance Language for Preservation of Historic Resources

#### Definition of Class I and II Historic Resources

There shall be two (2) classifications of historic resources as follows:

#### 1. Class I Historic Resources

- a. Historic resources listed in the National Register of Historic Places, as certified by the National Park Service and documented in a copy of the National Register of Historic Places Registration form.
- b. Historic resources listed as a contributing resource in a National Register historic district, as certified by the National Park Service and documented in a copy of the National Register of Historic Places Registration form.
- c. Historic Resources which have received a Determination of Eligibility (DOE) for listing on the National Register of Historic Places from the Bureau for Historic Preservation of the Pennsylvania Historical and Museum Commission and have been documented on a Pennsylvania Historic Resource Survey Form.
- d. Historic resources listed as a contributing resource in an historic district which have received a Determination of Eligibility (DOE) for listing on the National Register of Historic Places from the Bureau for Historic Preservation of the Pennsylvania Historical and Museum Commission and where the district has been documented on a Pennsylvania Historic Resource Survey Form.

#### 2. Class II Historic Resources

Class II Historic Resources shall include any resource included in the \_\_\_\_\_Township Historic Resource Inventory and/or shown on the \_\_\_\_\_Township Historic Resource Map which is not designated as a Class I Historic Resource.



This historic building was preserved in Brandywine at Thornbury and creates a unique relationship with the architecture of the new homes that surround it.

#### **Special Provisions for Historic Structures**

Historic resources shall be preserved to the greatest degree possible through inclusion in development plans and design, including historic buildings, structures, sites, objects, ruins, paths, trails, or any other historic landscape features. Additional use opportunities and modifications to area and bulk regulations may be permitted on properties with Class I or Class II historic resources.

#### I. Additional Use Opportunities for Historic Resources

Subject to obtaining conditional use approval from the board of supervisors, the following use opportunities may be permitted in place of or in addition to uses permitted in the underlying zoning district. Where such use is already permitted by right or by special exception in the underlying district and is the only use proposed on the lot, it shall not be subject to the provisions of this section, but shall meet all other applicable ordinance requirements.

a. Bed and breakfast.

Note: Supplemental use standards for bed and breakfasts should be included elsewhere in the zoning ordinance.

- b. Business, administrative, or professional office employing not more than five (5) persons.
- c. Artist studio or craft workshop employing not more than three (3) persons. Where instructional classes are provided, the use shall be limited to one (1) class at a time with not more than ten (10) students in the class and not more than two (2) instructors.
- d. Antiques store of one thousand five hundred (1,500) square feet or less of gross leasable floor area.
- e. Accessory apartment/residential conversion of the conversion of non-residential use.

Note: Supplemental use standards for residential conversions should be included elsewhere in the zoning ordinance.

- f. Personal service shop including beauty salon, barber, tailor, dressmaker, or similar shop, but not including dry cleaning or laundromat, and shall be limited to one (1) employee per five hundred (500) square feet of gross leasable floor area devoted to this personal service use, up to a maximum of one thousand five hundred (1,500) square feet.
- g. Repair services for small scale uses such as small appliances, watches, household furnishings, shoes, bicycles, and locks, but shall not include automobile, truck, motorcycle, or lawnmower repair, and shall be limited to one (1) employee per five hundred (500) square feet of gross leasable floor area devoted to the personal service use, up to a maximum of one thousand five hundred (1,500) square feet.
- h. **Optional**—Other uses of a similar nature as determined by the board of supervisors.

2. Modification to Area and Bulk Regulations

The board of supervisors, through the granting of a conditional use, may approve requested modifications to applicable lot area, lot width, or yard requirements or design standards otherwise applicable in the underlying zoning district for plans affecting Class I and II historic resources.

- a. Such modifications may be permitted to reduce otherwise applicable requirements to the minimum degree necessary to accommodate proposed plans, and to allow for the preservation and rehabilitation and/or reuse of the historic resource.
- b. For residential lots, where an historic resource exists on a site that is to be subdivided or developed, there shall be included a lot area of sufficient size to preserve those portions and features of the historic resource which are historically and architecturally significant.



The barn pictured above was preserved within the open space of Ridgelea in northern Chester County.

#### **Cluster Developments Exhibiting** This Design Feature

1:Ridgelea, p. 14 3:Pickering Glen, p. 18 7:Marsh Harbour, p. 26 15:Brandywine at Thornbury, p. 42 24:Ponds at Woodward, p. 60

#### 3. Requirements for Conditional Use Approval

In addition to the conditional use standards set forth in section \_\_\_\_\_ of this ordinance, the following requirements shall apply where additional use opportunities and/or modification to applicable area and bulk regulations for historic resources are permitted:

- a. The modification shall have the effect of encouraging the continued protection or reuse of the historic resource.
- b. The approval of the conditional use is deemed by the board of supervisors to be necessary to the preservation of the historic resource.
- c. The approval of the conditional use will be deemed by the board of supervisors to have no adverse effect on adjoining properties.
- d. Where plans involving historic resources under this Section result in all or portions of any such resource remaining unoccupied, the township may require that such unoccupied resource shall be tightly sealed and barred off in a manner not jeopardizing historical integrity, and the utilities turned off for safety.

- e. The board of supervisors shall be satisfied that adequate water supply and sewage disposal can be provided for all permitted uses.
- f. The board of supervisors may require as a condition of approval the establishment of a façade easement, conservation easements, or other means to guarantee permanent protection of the historical integrity of the subject resources.
- g. Except where clearly detrimental to the historical integrity and where public health, safety, and welfare are otherwise adequately provided for, all other applicable standards contained in this ordinance shall be complied with, including, but not limited to, requirements for buffering, lighting, storage, loading, parking, and signage.
- h. The applicant should maintain sufficient landscaped or buffer area and yard area surrounding the historic resource to retain the integrity of the historic landscape and setting. The applicant can mitigate impacts to the historic landscape and setting through appropriate vegetation or through screening compatible with such historic landscape and setting, and through retaining the view shed which visually links historic resources to their setting.

- i. The Historical Commission shall review all requests for conditional use approval regarding historic resources related to requested area and bulk modifications and evaluate whether requested modifications are necessary for the preservation, and are compatible with maintaining the historical integrity of the historic resource. Recommendations shall be in a written report to the board of supervisors.
- Plans involving any rehabilitation, alterį. ation, or enlargement of an historic resource proposed as part of the conditional use application shall use as a guideline the Secretary of the Interior Standards for Rehabilitation. Such plans shall be reviewed by the Historical Commission who shall submit a written review to the board of supervisors, and the plans submitted shall be in sufficient detail to allow the determination of their level of compliance with the standards. In approving the conditional use, the board of supervisors may set conditions requiring compliance with the Secretary of the Interior's Standards for Rehabilitation, as applicable.

### Bonus Provision for the Preservation of Historic Resources

A municipality may also want to include the following bonus for the preservation of an historic resource on the site.

1. Bonus for Historic Resource Preservation If there is an existing Class I or II historic resource on the tract that is proposed to remain in residential use upon development of the site, that historic resource shall not be counted towards the permitted number of dwelling units on the tract. The board of supervisors may require as a condition of bonus approval the establishment of a façade easement, conservation easements, or other means to guarantee permanent protection of the historical integrity of the subject resource.

### Additional Sources of Information

"Adaptive Re-Use of Older Buildings," Tool #59, Community Planning Handbook, Volume II, CCPC, 1999.

Preserving Our Places: Historic Preservation Planning Manual, Local Government Handbook #7, CCPC, 1998.



#### **Natural Features**

- 91 Preserve Natural Resources
- **96** Screening Between new and existing uses
- **103** Stormwater Management Facilities Landscaping and screening
- 107 Street Trees
- 110 Alternative Ground Covers
- **113** Cul-de-sac Turnarounds Landscaping and reduction of impervious coverage

The protection of natural features and incorporating these features into the site design of new subdivisions is the focus of this section. The importance of proper landscaping requirements, with an emphasis on naturalized landscaping, is also addressed.



The designers of Kimberton Greene used the existing woodland for a portion of the community trail system.

# Preserve Natural Resources

#### **Design Element**

Preserving natural resources and integrating them into the design and layout of a new subdivision greatly reduces the impact of the development on the environment and the community. Existing trees, shrubs, and other vegetation can be used to significantly enhance and screen new uses.

#### **Ordinance Considerations**

Preservation of natural features on the site should be approached from two fronts. First, the municipal ordinance should contain resource protection standards that apply to all types of proposed development in the municipality. Typically, such standards would include disturbance limitations for floodplains, wetlands, streams, riparian buffers, steep slopes, and woodlands. In addition to these universally applied protection standards, the cluster subdivision design requirements should ensure that the most sensitive natural resources are located in the open space where they can be permanently protected. The location of all the resources on the site should be identified first and the open space located accordingly. While protecting the site's natural resources is a primary concern, the ordinance language should also require that some minimum percentage of the open space be unconstrained land so that it can be used and enjoyed for recreational purposes by the residents of the subdivision.

A complete set of natural resource protection standards would be too extensive to include in this publication. Figure 3-1 indicates the minimum protection standards recommended for natural resources. The sample language for "Open Space Uses and Design" (Subsection 1.a, Preferred Purposes of Open Space; page 71) can be used to guide the applicant's placement of environmentally sensitive resources within the protected open space.

The protection standards for steep slopes, woodlands, wetlands, wetland margins, and riparian buffers can be included in either the zoning ordinance or subdivision and land development ordinance. Including them in the zoning ordinance allows them to be applied to more situations than just subdivisions and land developments, but takes away some flexibility since a variance might be required in certain circumstances. Subdivision standards can be waived as needed but such waivers should be carefully considered before being granted. Floodplain standards should be included in the zoning ordinance. The stormwater management standards are typically located in the subdivision and land development ordinance. Depending on how extensive the standards are, a separate stormwater management ordinance is sometimes adopted. Site plan requirements should be in the subdivision ordinance under the plan requirements section. If the resource protection standards are located in the zoning ordinance and apply to a wider range of uses than subdivisions and land developments (i.e., building permits, conditional use, special exceptions, variances, etc.), information requirements for delineating the resources should either be included in the zoning ordinance, or a cross reference to the plan information requirements in the subdivision ordinance should be provided.

In addition, requirements for a site analysis plan should be included in the subdivision ordinance to verify where the natural features are located on a given site to ensure they are adequately protected.



The preserved woodland and areas of meadow are integrated into the layout of Charlestown Hunt creating a beautiful back drop to the dwelling units and trail system.

## Comparison of House Layouts and Integration of Existing Vegetation

These photographs illustrate two vastly different approaches to the layout and landscaping of a residential dwelling unit. The house on the top was built on land that was formerly farmed or stripped of existing vegetation prior to development. Although the new landscaping will mature and eventually offer limited screening, the home will not benefit from the characteristics of mature landscaping. The home in the lower photograph was designed and located to minimize the removal of mature trees and reap the benefits of mature landscaping including shade, wind break, screening, soil holding, and noise reduction. Although the size and color of the dwelling units and pre-existing site conditions influence the quality of these images, the positive impact of the preservation and integration of natural features is clearly evident.





#### **Minimum Recommended Natural Resource Protection Standards**

Protected Resource	Protection Standard Maximum Percent Disturbance Allowed <sup>I</sup>	Suggested Location of Provisions	Other Protection Provisions
Floodplain	0%	Zoning	• FEMA approved floodplain standards.
Steep Slopes 15% to 25%	30%	Zoning	<ul> <li>Standards to minimize disturbance, grading, and erosion.</li> <li>Certain activities/uses prohibited on 25%+ slopes</li> </ul>
Steep Slopes 25% and up	0 to 15%		
Wetlands	0%	Zoning	<ul> <li>Specific identification and delineation standards for wetlands.</li> <li>Require state and federal permits.</li> </ul>
Wetland Margins	20%	Zoning	• Provisions for determining width of wetland margin.
Riparian Buffers Inner Buffer	0%	Zoning	<ul> <li>75 to 100 feet total width depending on conditions adjacent to stream.</li> <li>Two-tier standard with stricter standards applied adjacent to stream. (Some use 3-tier approach)</li> <li>Revegetation provisions for unforested buffers.</li> </ul>
Riparian Buffers Outer Buffer	20%		
Woodlands Residential	35%	Zoning and SLDO (tree replacement standards in SLDO)	<ul> <li>Exceptions for forestry or timber harvesting, per MPC; timber harvesting plan required.</li> <li>Protection standards (from construction activities) for trees to remain on site.</li> <li>Include hedgerows, specimen trees in protected vegetation.</li> <li>Optional: tree replacement requirements if more than specified area or number of trees are removed.</li> </ul>
Woodlands Non-Residential	50%		
Stormwater Management	n/a	SLDO or separate ordinance	• Stormwater standards that promote infiltration and innovative use of BMPs, reduce stormwater runoff volume produced, and that discourage typical detention basin solutions to stormwater management.
Site Plan Requirements	n/a	SLDO	•Resources must be identified and mapped on site plan.
Continued Protection of Resources	n/a	Zoning and SLDO	• Provisions for permanent protection of preserved resources.

<sup>I</sup> Where resources overlap, the stricter protection standard applies. Source: Chester County Planning Commission, 2002.

#### **Cluster Developments Exhibiting This Design Feature**

1: Ridgelea, p. 14 2: Kimberton Greene, p. 16 3: Pickering Glen, p. 18 4: Charlestown Hunt, p. 20 5: Waynesborough Woods, p. 22 6: Deerfield Knoll, p. 24 7: Marsh Harbour, p. 26 8: Pinebrooke Village, p. 28 9: Uwchlan Woods at Williamsburg, p. 30 10: The Woodlands, p. 32 11: Parke Farm, p. 34 13: The Jefferson at Westtown, p. 38 15: Brandywine at Thornbury, p. 42 16: Brandywine River Estates, p. 44 17: Birmingham Hunt, p. 46 18: Reserves at Chaddsford, p. 48 19: Oakdale, p. 50 20: Country Club Valley, p. 52 21: Tullamore, p. 54 22: Coniston, p. 56 23: Southridge, p. 58 24: Ponds at Woodward, p. 60 25: Villages at Penn Ridge, p. 62

#### **Additional Sources of Information**

Wetlands, Planning Bulletin #33, CCPC, 2002 (revised).

"Wetlands Management," Tool #17, Community Planning Handbook, Volume I, CCPC, 1997.

"Floodplain Management," Tool #18, Community Planning Handbook, Volume I, CCPC, 1997.

"Vegetation Management: Woodlands, Hedgerows, Native Vegetation," Tool #19, Community Planning Handbook, Volume I, CCPC, 1997.

"Slope Management," Tool #20, Community Planning Handbook, Volume I, CCPC, 1997.

"Riparian Buffers," Tool #21, Community Planning Handbook, Volume II, CCPC, 1999.

"Post Construction Stormwater Management," Tool #32.a, Community Planning Handbook, Volume II, CCPC, 1999. (Note: Tool #32.a was prepared by Chester County wra and will be available as an addition to the handbook in early 2004).

Examples of townships that have adopted comprehensive natural resource protection standards include: North Coventry, Kennett, Franklin, Willistown, and East Fallowfield.



In Brandywine at Thornbury, a stream corridor was preserved and serves as a stormwater management facility and a natural amenity

Natural Features Screening



Deerfield Knoll is a development that successfully integrated the existing trees as a screen between the development and adjacent uses.

# Screening Between new and existing uses

#### **Design Element**

Screening new homes from adjacent uses around the perimeter of the site should be addressed, particularly if the new residential uses are of a higher density than adjacent residential uses. The setbacks and required buffer yards from the tract perimeters should not be so onerous that they unnecessarily consume a high percentage of the required open space.

#### **Ordinance Considerations**

Setbacks and screening standards for cluster subdivisions should be the same as those required for conventional subdivisions with similar densities and housing types. That is, the uses proposed in the subdivision, whether single-family homes, twins, or townhouses, should be the controlling factor, not whether it is a cluster or conventional subdivision. While screening and buffering for privacy is desirable, the goal should not be total invisibility between uses of a similar nature.

The following buffer language can be generally applied throughout the municipality. It will ensure that proper screening is required between the built portion of a cluster subdivision and adjoining uses.

# Sample Ordinance Language for Screening Between New Development and Existing Uses

#### Section \_\_\_\_\_. Buffering and Screening

The following standards are hereby established to create an acceptable transition between different types and intensities of land uses and to reduce conflicts between those uses.

#### A. Applicability

Buffer yards and visual screening, consisting of the indicated Class A, B, C or D buffer, shall be required between the following uses, whether the use is proposed or existing.

- 1. Class A buffer—A Class A buffer shall be required between any development consisting of multi-family dwelling units, singlefamily attached dwelling units (townhouses), or any portion of a residential development with a net density of four (4) or more units per acre adjoining any residentially zoned district, or residential use.
- 2. Class B buffer—A Class B buffer shall be required between any commercial use, office use, active recreational use, or mobile home park adjoining any residentially zoned district or residential use.
- 3. Class C buffer—A Class C buffer shall be required between any industrial use or intensive agricultural use, except as other-

wise required in Subsection 4, below, adjoining any residentially zoned district or residential use.

- 4. Class D buffer—A Class D buffer shall be required between the following uses and any other use: junkyard; recycling center; mini-warehouse or similar uses. The buffer shall be provided between the right-of-way line and along all property lines.
- 5. Where residential developments propose streets with reverse frontage lots, the following buffer requirements shall be met along the rear yard lot line:
  - a. Where the rear lot line abuts a street with a functional classification of collector or primary distributor streets, a Class A buffer shall be provided.
  - b. Where the rear lot line abuts a street with a functional classification of principal or minor arterial or abuts an expressway, a Class B buffer shall be provided.
- 6. Other uses determined to be potentially conflicting shall provide the buffer class specified by the board of supervisors,

upon recommendation by the planning commission.

#### Buffer requirements for uses on adjoining village lots may be modified upon recommendation of the planning commission when such modification would be in keeping with the mixed use character and smaller lot sizes of the particular village. Buffer requirements shall be met along lot lines between village districts and adjoining non-village zoning districts.

#### **B. Buffer Class Standards**

After determining the required buffer class, the applicant shall select an appropriate planting

#### Note:

It is recommended that the municipality include a preferred plant list and encourage the use of native species. option listed in Figure 3-2. Plantings are not required to be aligned on property or right-ofway boundaries. Rather, the applicant is encouraged to site plantings within the required buffer yard as necessary to achieve the optimal screening level and to blend into the sur-

rounding landscape. Plant materials shall be selected from the plant materials list in Appendix .

No more than thirty (30) percent of a required buffer may consist of one type of plant species.

<sup>I</sup> The supplemental use standards for uses requiring a Class D buffer would typically require a fence around the entire use.

#### Figure 3-2

Buffer Class	Minimum Buffer Yard Width	Minimum Planting Requirements
Class A	Twenty-five (25) feet	One (1) canopy tree per forty (40) feet, plus one (1) ever- green per thirty (30) feet of boundary; or One (1) canopy tree per forty (40) feet, plus one (1) flowering tree per sixty (60) feet, plus one (1) evergreen per sixty (60) feet of boundary.
Class B	Thirty-five (35) feet	One (1) evergreen per fifteen (15) feet, and one (1) flowering tree per fifty (50) feet of bound- ary.
Class C	Forty (40) feet.	One (1) evergreen per twenty (20) feet, plus one (1) berm four (4) feet high; or Six (6) foot high cedar or spruce fenc- ing with one (1) flower or ever- green tree every thirty (30) feet.
Class D	Thirty (30) feet	The following planting shall be provided between the required fence and the street or property line: <sup>I</sup> One (1) canopy or flow- ering tree at an average of one (1) tree per forty (40) feet, plus one (1) evergreen tree at an average of one (1) tree per twenty (20) feet; or One (1) canopy or flowering tree at an average of one (1) tree per forty (40) feet, plus one (1) shrub per eight (8) feet.



The open space area (shown in green) surrounding Waynesborough Woods creates a consistent and effective screen to adjacent uses and Route 252.

#### C. Plant Materials

- 1. Existing plantings, woodlands, hedgerows, topography, or man-made structures can reduce or eliminate the buffering requirements if they partially or completely achieve the same level of screening as the planting requirements outlined in this section. This determination shall be made at the discretion of the board of supervisors, upon recommendation by the planning commission.
- 2. Existing trees within the required buffer yard greater than three (3) inches in caliper or greater than eight (8) feet in height shall be preserved to the extent feasible. Such trees may be counted towards required plant materials, as determined by the board of supervisors, upon recommendation by the planning commission.

- 3. Each planting option listed in Subsection B, above, may use any of the plant materials listed in Appendix \_\_. Minimum plant size shall be as indicated in Appendix \_\_.<sup>2</sup>
  - a. The use of native plant species is strongly encouraged and no invasive species shall be used. In addition, invasive plant species shall not be used in buffer plantings or for any other proposed landscaping.
  - b. The board of supervisors, upon recommendation by the planning commission, may permit other plant types if they are hardy to the area, are not subject to blight or disease, and are of the same general character and growth habit as those listed in Appendix \_\_.
  - c. All planting materials shall meet the standards of the American Association of Nurserymen.

 Recommended sizes are as follows: Deciduous/canopy trees = 3.0 to 3.5 inch caliper; deciduous/flowering trees = 2.5 to 3.0 inch caliper; Evergreen trees = 4.0 to 5.0 feet in height; Shrubs = 3.0 to 4.0 feet in height.
- 4. The township may request, upon recommendation of a registered landscape architect, additional buffer plantings if it is determined that, due to specific site circumstances, the prescribed buffer is not fully effective.
- 5. Optional: Where it is determined that, due to topography or other factors, the buffer classes and standards prescribed above, do not alone provide an adequate buffer

#### Note:

The use of berms is generally discouraged, particularly in rural areas where it may not blend well with the surrounding landscape. between adjoining incompatible uses, the township may require the planting to be placed upon a berm at a height of three (3) to five (5) feet to increase its effectiveness.

#### **D.** General Buffering Requirements

- 1. Buffer yards shall be maintained and kept clean of all debris, rubbish, weeds, and tall grass.
- 2. Planting in the buffer area shall be installed and thereafter maintained by the property owner. Required buffer plantings shall not be removed without the prior approval of the township. If such plantings are removed, the township may require that they be replaced, in kind, at the expense of the property owner.

- 3. Plant materials required within the buffer area shall be assured by a performance guarantee posted with the township in an amount equal to the estimated cost of the plant materials. Buffer plantings shall be guaranteed and maintained in a healthy and/or sound condition for at least eighteen (18) months or shall be replaced. The costs of the landscape material and installation shall be considered in determining the amount of any performance guarantee required.
- 4. The locations, dimensions, and spacing of required plantings shall be adequate for their proper growth and maintenance, considering sizes of such plantings at maturity and their present and future environmental requirements, such as soil, pH, moisture, and sunlight. The buffer planting shall be so placed that, at maturity, vegetation extends not closer than three (3) feet from any street right-of-way.
- A clear sight triangle, in accordance with Section \_\_\_\_\_ of the ordinance, shall be maintained at all street intersections and at all points where private accessways intersect public streets.

#### Cluster Developments Exhibiting This Design Feature

5: Wavnesborough Woods, p. 22 6: Deerfield Knoll, p. 24 8: Pinebrooke Village, p. 28 9: Uwchlan Woods at Williamsburg, p. 30 11: Parke Farm, p. 34 12: Sagamore, p. 36 13: The Jefferson at Westtown, p. 38 14: The Greens at Penn Oaks, p. 40 16: Brandywine River Estates, p. 44 18: Reserves at Chaddsford, p. 48 19: Oakdale, p. 50 20: Country Club Valley, p. 52 21: Tullamore, p. 54 22: Coniston, p. 56 23: Southridge, p. 58 24: Ponds at Woodward, p. 60 25: Villages at Penn Ridge, p. 62

## Additional Sources of Information

Screening and Buffering Considerations for Land Development, Subdivision Note #15, CCPC, 1991.

North Coventry Township Subdivision and Land Development Ordinance, Section 626, Landscaping, updated 2003.

- 6. No structures may be placed within the buffer area and no manufacturing or processing activity or storage of materials shall be permitted, except for the following:
  - a. Landscaped treatments, such as berms, fences or walls which aid in screening and do not conflict with the character of adjoining properties, including drainage, light, and air flow, or block clear sight distance required at intersections.
  - b. Structures relating to and used for landscaping, such as tree wells, tree guards, tree grates and retaining walls to preserve stands or specimens of existing trees or used for other functional purposes.
  - c. Roads which provide direct ingress/egress for the tract or lot, including appurtenant structures within road rights-of-way, such as curbs, sidewalks, signs, lighting or benches.
  - d. Underground utilities.

- 7. Mechanical equipment, storage structures, loading docks, and similar facilities shall be fully screened from view from adjacent streets or residential zoning districts or uses, through the use of fences or planting materials.
- 8. The applicant is encouraged to install buffer plantings in naturalistic groupings rather than in linear strips, if a satisfactory buffer can be achieved.
- 9. Where buffering is required, a landscape plan shall be submitted consistent with the requirements of Section \_\_\_\_\_ of this ordinance.
- 10. Where earthen works are required to provide effective screening, the specified elevation of the berm shall be that achieved after the earth has settled.
- 11. Landscaping of stormwater management facilities.

Note: See next section (page 103), Stormwater Management Facilities — landscaping and screening



Stormwater basin or fishing hole? A look at the stormwater management basin at Country Club Valley.

## Stormwater Management Facilities Landscaping and screening

## **Design Element**

This design element can be dealt with through the ordinance's stormwater management and landscaping and buffering standards and should apply to all types of developments. From a design viewpoint, a naturalized planting is preferred for stormwater management facilities. This effect can best be achieved when the use of large stormwater detention basins are avoided in favor of retention basins that resemble ponds or wetlands or other types of less visible stormwater management techniques. For example, except for the intake in the foreground of the photograph to the left, the stormwater management facility could pass for an existing pond.

## **Ordinance Considerations**

The use of stormwater regulations that implement conservation development design practices should be incorporated throughout the ordinance standards. For a thorough discussion on these practices, see Part 8, Goal 5 of Watersheds: An Integrated Water Resources Plan for Chester County, Pennsylvania and Its Watersheds (2002).

The following sample language is excerpted from the Willistown Township Environmental Protection Ordinance of 1995.



In Deerfield Knoll, the stormwater management basin has been designed to provide a community amenity and gathering point.



Screening through the use of vegetation can significantly reduce the impact of large stormwater management facilities such as this example in Kimberton Greene.

## Sample Ordinance Language for Landscaping and Screening of Stormwater Management Facilities

#### 73-55 Landscaping of Stormwater Management Basins and Related Facilities

- A. Landscaping shall be required in and around all stormwater management facilities with a minimum surface area of one-thousand (1,000) square feet for the purposes of:
  - 1. Assisting in the management of stormwater;
  - 2. Stabilizing the soil within such facilities to control erosion;
  - 3. Enhancing the physical appearance of such facilities; and
  - 4. Mitigating maintenance problems commonly associated with the creation of such facilities.

- B. A planting plan and planting schedule shall be submitted in accordance with the following:
  - 1. Wet meadows including basin floors.
    - a. Wet meadows and basin floors shall be planted with wildflowers and nonaggressive grasses, the intent being to create a mixed meadow of such plantings, where appropriate. Selection of plantings should be based on whether the area in question is usually well drained or permanently wet and whether the area will be used for recreation purposes. No woody plants shall be planted within the saturated zone (phreatic line) of a stormwater management basin.

Note: Appendix B of the Willistown Ordinance contains planting recommendations for these and other conditions in and around stormwater management basins and related facilities. The appendix also contains additional specifications for planting in areas prone to flooding, such as stormwater basins and their edges.

- b. Seeding by drills, corrugated rollers, cyclone or drop seeders or hand seeding of such areas is preferred; however, hydroseeding followed by hydromulching can be used on wet ground and steep slopes.
- c. Fertilizers, as a nutrient supplement, shall not be used unless it is documented that soil conditions warrant such use. Soil for planting of wildflowers shall contain not less than three (3) percent or more than ten (10) percent organic matter, as determined by an agricultural chemist, with certification of the test before planting.
- d. Seeding should take place either between April 1 and May 1 or September 1 and October 15. Planting areas shall be soaked to maintain a consistent level of moisture for at least four (4) to six (6) weeks.
- e. Once established, a single annual mowing when plants are dormant should be sufficient to maintain a wet meadow and/or basin floor.

- 2. Wet edges which remain wet all or most of the year shall be planted with wildflowers, grasses, and shrubs. Plants to be located on rims or banks which remain dry most of the year should be planted with species tolerant of dry soil conditions.
- 3. Wooded Areas
  - a. Where stormwater management facilities adjoin wooded areas, trees and shrubs shall be selected and planted so as to blend with existing surroundings.
  - b. Plantings in such areas shall be of sufficient density to eliminate the need for mowing.
  - c. Planting of clusters of trees and shrubs around stormwater management facilities is recommended, where applicable, to provide for wildlife habitat, wind control, and buffering and screening.
  - d. Vegetation shall be planted during appropriate times of the year, predominantly between late March and mid-May or from early October until evidence of ground freezing, depending upon the species selected. Most deciduous trees and shrubs can be planted in either spring or fall. Evergreens are best planted in late summer or early fall.

#### Cluster Developments Exhibiting This Design Feature

Ridgelea, p. 14
Charlestown Hunt, p. 20
Deerfield Knoll, p. 24
Parke Farm, p. 34
The Jefferson at Westtown, p. 38
Brandywine at Thornbury, p. 42
Birmingham Hunt, p. 46
Reserves at Chaddsford, p. 48

20: Country Club Valley, p. 52



This stormwater management facility at Country Club Valley is designed to look like a natural pond.

## Additional Sources of Information

"Stormwater Management and Erosion Control—Best Management Practices," Tool #32, Community Planning Handbook, Volume I and II, CCPC, 1997 and 1999.

"Post Construction Stormwater Management," Tool #32.a, *Community Planning Handbook*, *Volume II*, CCPC, 1999. (Note: Tool #32.a was prepared by Chester County WRA and will be available as an addition to the handbook in early 2004).

Chapter 73, Environmental Protection, Township of Willistown, Chester County, PA, Ord. No. 9-1995.

Pennsylvania Handbook of Best Management Practices for Developing Areas, Pennsylvania Association of Conservation Districts, 1998.

Self-Guided Stormwater Best Management Practices (BMP) Tour, Chester County Conservation District, April 2002. The publication includes several examples of naturalized stormwater facilities. For copies of the tour contact CCCD at 610-436-9182 or 610-696-5126. This document is also available on their website at www.chesco.org/conservation/ bmp tour.htm.

Watersheds: An Integrated Water Resources Plan for Chester County, Pennsylvania and Its Watersheds, Chester County Water Resources Authority, 2002.

- 4. Slopes
  - a. Where slopes are gentle, a mixture of meadow grasses and wildflowers (for wet meadows) shall be planted.
  - b. On steep slopes, dense spreading shrubs (tolerant of dry soils) shall be planted.A heavy mat mulch shall be used during the period of establishment.
  - c. No woody plant materials or trees shall be located on a constructed or natural berm acting as an impoundment structure of a detention/retention basin. Trees shall be located on the downstream side of an impoundment berm a sufficient distance from the toe of the constructed slope to assure that the toe of the slope is outside the dripline of the species planted at maturity.
- 5. In cases where stormwater management facilities are to be located in proximity to wetlands or waterways, the applicant's planting plan and schedule shall consider the sensitive conditions existing therein and be modified accordingly to reflect existing flora.
- 6. Screening and buffering. Stormwater management facilities shall be screened in a manner which complements the existing landscape and provides sufficient access for maintenance. Complete perimeter screening shall not be necessary; however, it shall be the applicant's responsibility to demonstrate how the proposed plantings achieve the desired screening effect.



## Street Trees

## **Design Element**

Street trees greatly enhance the attractiveness and appeal of a residential development, contribute to community character, and provide environmental benefits. Street tree plantings can be comprised of existing healthy trees, new plantings, or a combination of both.

The top photo illustrates a traditional allee of trees along an entrance road that defines the edge of the road, provides shade, and creates a unique and memorable experience. The bottom photo is a more typical example of street trees that have been planted at consistent intervals to enhance the design and appearance of a newly developed community.

## **Ordinance Considerations**

Requirements for street trees should be included in the subdivision and land development ordinance and be applied to all types of subdivisions. Requiring the right types of trees and appropriate spacing between trees during the plan review stage is important to avoid fixing costly mistakes at a later date. The use of native species should be encouraged, if not required.

The following sample ordinance standards can help to ensure the proper number, placement, and size of street trees.

#### **Cluster Developments Exhibiting** This Design Feature

1: Ridgelea, p. 14 2: Kimberton Greene, p. 16 3: Pickering Glen, p. 18 5: Waynesborough Woods, p. 22 6: Deerfield Knoll, p. 24 7: Marsh Harbour, p. 26 9: Uwchlan Woods at Williamsburg, p. 30 10: The Woodlands, p. 32 12: Sagamore, p. 36 14: The Greens at Penn Oaks, p. 40 15: Brandywine at Thornbury, p. 42 16: Brandywine River Estates, p. 44 17: Birmingham Hunt, p. 46 21: Tullamore, p. 54 22: Coniston, p. 56 23: Southridge, p. 58 25: Villages at Penn Ridge, p. 62

#### Additional Sources of Information

Native Plants in the Chester County Landscape, Planning Bulletin #51, CCPC, 1996.



Street trees and vegetation soften the look of sidewalks and curbing at the Greens at Penn Oaks.



Street trees can be enhanced by the use of other features such as fencing, landscape stones, or ground plantings.

## Sample Ordinance Language for Street Trees—Composition of On-Street Landscaping

#### **Street Trees**

- 1. Street trees shall be planted along both sides of proposed streets where there are no existing shade trees and along the adjacent side of existing streets.
- 2. Street trees shall be located between the edge of the cartway and the right-of-way but shall be located so as not to interfere with the installation and maintenance of sidewalks and utilities. To avoid such interference, street trees shall be located a minimum of eight (8) feet from the edge of the paved cartway and a minimum of four (4) feet from the edge of any sidewalk.
- 3. At intersections, trees shall be located no closer than thirty (30) feet from the intersection of street right-of-way lines. Clear sight distances required by Section \_\_\_\_\_ shall be maintained.
- 4. Street trees shall be planted at intervals of not more than forty (40) feet and shall not be planted opposite each other, but shall alternate. Existing trees located between the cartway and right-of-way with a minimum caliper of three (3) inches may be included in this calculation if approved by the township. Existing trees to be preserved shall be protected during

the construction phase in accordance with Section (Tree Protection Standards).

- 5. Trees to be installed shall be a minimum three(3) inch caliper and a minimum of eight (8) feet in height at planting.
- 6. Trees shall be resistant to salt and de-icing compounds, not subject to disease or blight, able to withstand concentrated heat from large paved surfaces, and have deep root systems to prevent cracked pavements and sidewalks. Proposed street trees may be chosen from the deciduous tree list in Appendix \_\_\_\_. Trees of the same general character and growth habit may be permitted if approved by the township. The use of the native species denoted in Appendix \_\_\_\_ is strongly encouraged.
- 7. Trees shall conform with the standards for nursery stock of the American Association of Nurserymen.



The design and planting of vegetation must be considered carefully in order to prevent problems such as poor tree selection or over-planting, as shown here.

Note: The municipality may choose to require the use of native species.



Areas of natural ground cover are located throughout Marsh Harbor.

## **Alternative Ground Covers**

### **Design Element**

The use of alternative ground covers, such as naturalized meadows rather than the typical turf, should be encouraged to reduce the environmental impacts associated with seeding and maintenance of large areas of lawn. Alternative ground covers can accommodate the reduction of excessive watering or irrigation and fertilization. This will reduce the impact on the quality and quantity of both ground and surface water resources and increase the soils capacity to infiltrate stormwater and filter pollutants. Lower maintenance costs provide another incentive for developers and Homeowner's Associations to consider less manicured landscaping. Woodlands, hedgerows, and other existing natural vegetation are also environmentally friendly ground covers that should be preserved wherever possible.

#### **Ordinance Considerations**

The use of naturalized meadows can be encouraged through the open space design standards in the ordinance. The municipality should ensure that it does not inadvertently prohibit meadows, which may only need to be mown a few times a year, through a nuisance or noxious weed ordinance that does not allow grass to grow above a certain height. Where woodlands, hedgerows, and wetlands are already in place, they should be protected through municipal resource protection standards (see page 91, Preserve Natural Resources.)

The "Permitted Uses" section of the "Open Space Design Standards" on page 72 clearly indicates that meadows, woodlands, hedgerows and other natural areas are desired and allowed in the designated open space. The municipality may want to go further and indicate in the "Permitted Uses" section that natural groundcovers are preferred over lawn except where active recreation uses (playgrounds, playing fields, etc.) are proposed. If appropriate, the municipal landscape standards should be revised to include similar language to ensure that the standards do not preclude the use of natural groundcovers. As noted above, the municipality should review and revise other codes or ordinances that might not allow for naturalized landscaping plans and the higher grasses typical of meadows.

See also page 103, "Stormwater Management Facilities—landscaping and screening," which includes provisions for naturalized planting of stormwater facilities.



Areas of meadow create spectacular views within Charlestown Hunt.

#### **Cluster Developments Exhibiting** This Design Feature

2: Kimberton Greene, p. 16
3: Pickering Glen, p. 18
4: Charlestown Hunt, p. 20
7: Marsh Harbour, p. 26
11: Parke Farm, p. 34
13: The Jefferson at Westtown, p. 38
15: Brandywine at Thornbury, p. 42
16: Brandywine River Estates, p. 44
17: Birmingham Hunt, p. 46
21: Tullamore, p. 54
22: Coniston, p. 56
24: Ponds at Woodward, p. 60

#### **Additional Source of Information**

Native Plants in the Chester County Landscape, Planning Bulletin #51, CCPC, 1996.



Naturalized meadow is maintained around Tullamore reducing the cost and need for maintenance associated with lawn.



In addition to reducing the percentage of impervious coverage, this landscaped island creates a community meeting place in Birmingham Hunt.

# Cul-de-sac Turnarounds Landscaping and reduction of impervious coverage

## **Design Element**

When properly designed, a cul-de-sac can be a useful technique for dealing with certain site configurations. When improperly designed, the cul-de-sac turnaround can create huge expanses of paved area requiring additional maintenance and generating excessive stormwater runoff. Cul-de-sac turnarounds should be required to include landscaped islands in the center to reduce impervious surface and provide a more attractive view both for homes facing the cul-de-sac and for residents of the subdivision in general.

## **Ordinance Considerations**

The cul-de-sac design and landscaping standards can be dealt with in the street standard section of the subdivision and land development ordinance and should apply to all types of subdivisions. The following ordinance language includes requirements and specifications for landscaped cul-de-sac islands.

#### **Comparison of Cul-de-sac Turnarounds**

These photographs illustrate two very different approaches to the design of a cul-de-sac turnaround. The top image is a cul-de-sac which is estimated to be between 100 and 120 feet in diameter. This cul-de-sac provides access to only four or five single-family dwelling units and contributes significantly to the amount of impervious surface located in the development. The cul-de-sac pictured on the bottom provides access to the same number of dwelling units, perhaps more, and is estimated to be 70 to 80 feet in diameter. In addition to the significant reduction in impervious coverage afforded by the dramatic decrease in diameter, a landscaped island has been implemented which further reduces the coverage.

#### **Cluster Developments Exhibiting This Design Feature**

- 1: Ridgelea, p. 14
- 2: Kimberton Greene, p. 16
- 5: Waynesborough Woods, p. 22
- 7: Marsh Harbour, p. 26
- 9: Uwchlan Woods at Williamsburg, p. 30
- 10: The Woodlands, p. 32
- 14: The Greens at Penn Oaks, p. 40
- 15: Brandywine at Thornbury, p. 42
- 20: Country Club Valley, p. 52
- 21: Tullamore, p. 54
- 23: Southridge, p. 58



### Sample Ordinance Language for Cul-de-sac Turnarounds

#### **Cul-de-Sac Turnarounds**

- 1. Cul-de-sac turnarounds shall be designed with a landscaped center island.
  - a. The island shall be landscaped with a permanent groundcover to be shown on the landscaping plan submitted with the preliminary plan.
  - b. The center island shall have mountable curbs unless otherwise approved to accommodate alternative stormwater best management practices.
  - c. Maintenance responsibility of such islands shall be determined prior to final plan approval and recorded on the deed.
- The cul-de-sac turnaround shall have a right-of-way radius of fifty-five (55) feet and an outer paving radius of forty-five (45) feet. The moving lane around the center island shall have a paved width of twenty (20) feet.

Note: These radii are only appropriate for a cul-de-sac with a center island. If for some reason the center island requirement were to be waived, the right-of-way and paved radius should be reduced to 50 feet and 40 feet respectively.

3. The cul-de-sac turnaround shall have a maximum grade of four (4) percent. The minimum grade around the curbing shall not be less than one (1) percent.

## Additional Sources of Information

"Residential Street Design," Tool #57, Community Planning Handbook, Volume I, CCPC, 1997.

Circulation Handbook, Local Government Handbook #5, CCPC, 1994.

Residential Streets, Urban Land Institute, Second Edition, 1990.

Performance Streets: A Concept and Model Standards for Residential Streets, Bucks County Planning Commission, Doylestown, PA, 1980.



A landscaped cul-de-sac turnaround can significantly reduce impervious coverage and enhance a community's appearance.



## **Vehicular Facilities**

- 117 Street Width
- **126** Boulevards Alternative entrance design
- 129 Street Lighting
- **133** Alternative Parking Design Landscaping and reduction of impervious coverage

**D**esign elements addressed in this section include street widths and function, boulevard design, and street lighting.



This cartway is appropriately sized to discourage speeding in this residential neighborhood.

## Street Width

### **Design Element**

The width of a residential street should be based on its intended use, not on a "one-size-fits-all" standard. The ordinance requirements should link the design of the street to the anticipated number of trips on the street and whether or not on-street parking will be provided. Where smaller lots are proposed, on-street parking should be permitted on at least one side of the street. Benefits of appropriate street design include reduced impervious surface, lower maintenance costs, reduced width of the streetscape, and a reduction in speeding that is encouraged by wide roadways.

### **Ordinance Considerations**

These concepts for street design apply to all types of residential subdivisions and should be included in the street design standards of the subdivision and land development ordinance.

The sample language starting on page 120 is an abbreviated version of residential street standards based on the principles of *Performance Streets*, *Residential Streets*, and recommendations of the *Circulation Handbook* (see references for these publications on page 125). This sample language focuses primarily on recommended street widths based on road usage. For a more in depth discussion of residential street design, review any of the publications listed on page 125. A full annotated residential street design ordinance is found in Section 3.0 of the *Community Planning Handbook*, *Volume 1*. Figure 3-3 illustrates the hierarchy of local residential roads.

#### **Comparison of Roadway Widths**

The aerial illustrates a variety of roadway classifications in northwestern Chester County. Local Access Road A was designed to provide access while reducing the impact of the paved area on the character of the community and environment at a width of only 20 feet. Local Access Road B, however, illustrates development where houses are constructed along a wide expanse of asphalt which impacts the character of the development as well as the surrounding environment. At 36 feet, Local Access Road B is wider than the nearby Minor Arterial (24 feet) and the Major Arterial (30 feet) pictured in the lower left. Although Local Access Road A provides access to an area of development that is clearly lower in density, is an additional 16 feet of cartway necessary to provide access as shown on Local Access Road B? An amendment to the street standards in the subdivision and land development ordinance would have made it possible to reduce the areas and impact of impervious coverage.



Figure 3-3 Hierarchy of Local Roads

Figure 3-3 illustrates a recommended hierarchy for local residential streets.



Source: Adapted from Circulation Handbook, Local Government Handbook #5, CCPC, 1994.



The local access road in Tullamore appears as a single driveway as a result of its narrow width and absence of curbing.

### Sample Ordinance Language for Street Width—Appropriate to Use

#### **Residential Street Widths**

#### **I. Local Access Streets**

- a. Definition—The local access street is the lowest order street in the residential street hierarchy. It is intended to carry the least amount of traffic at the lowest speed and will provide the safest and most desirable environment for a residential neighborhood. Developments should be designed so the maximum number of homes possible front on this class of street.
- **b.** Service Restrictions—A local access street shall be designed to carry no more traffic than is generated on the street itself. Each local access street shall be designed so that no section of the street carries an Average Daily Traffic (ADT) volume of greater than two hundred (200). Each half of a loop street may be regarded as a single local access street in which case a total ADT of four hundred (400) is permitted.

- **c. Travel Lanes**—All local access streets shall provide at least two (2) travel lanes. Where a parking lane is not required to accommodate spillover parking, occasional short-term parking for service pick-up or delivery shall be permitted in travel lanes.
- d. Right-of-Way Width—fifty (50) feet.
- e. Design Standards Travel lane widths shall be determined on the basis of the intensity of development proposed and the manner in which parking shall be provided as indicated in Figure 3-4.

### Figure 3-4 Local Access Streets

Local Access Streets						
Design Factors			Street Standards			
	Parking					Individual
Development Type Fronting On Street	On-Lot	On-Street/ Spillover	Travel Lane Width <sup>I</sup>	Parking Lane Width	Total Cartway Width	Driveway Access
Permanent open space, no residential frontage	None	None	8 to 9 feet	n/a	16 to 18 feet	n/a
Lots 2 acres <sup>2</sup> or more, deed restricted against further subdivision	On-Lot	None	8 to 9 feet	n/a	16 to 18 feet	Yes
Lot widths 100 feet or greater	On-Lot	None	9 to 10 feet	n/a	18 to 20 feet	Yes
Lot widths 40 to 100 feet	On-Lot	One Side <sup>3</sup>	9 to 11 feet	8 feet	26 to 30 feet	Yes
Lot widths less than 40 feet w/rear alley access	On-Lot from rear alley	Two Sides <sup>4</sup>	9 to 11 feet	16 feet (8 each side)	34 to 38 feet	No
Lot widths less than 40 feet or no separate housing lots (apartments)	On-lot or parking lot provided	Off-street parking lot provided	10 to 11 feet	n/a	20 to 22 feet	Yes (for parking lots)

If no curbing or flush curbing is being used, the minimum width should be used. If raised curbing is proposed, at least one additional foot of width above the minimum shown should be provided.

<sup>2</sup> *Performance Streets* uses a minimum lot size of five acres.

<sup>3</sup> Alternatively, for very low volume streets, two parking lanes and one travel lane can be provided (see "Local Access Street" F in Figure 3-3).

4 A single parking lane may be provided if houses front on only one side of the street. In such cases, the total cartway width may be reduced by eight (8) feet to a width of 26 to 30 feet.



The narrow cartway, short setbacks, and sidewalks enhance the neo-traditional design of this cluster development.

#### 2. Secondary Distributor Streets

- a. **Definition**—The secondary distributor street is the middle order street in the residential street hierarchy. It carries more traffic than the local access street but can provide an acceptable if not optimum environment for a residential neighborhood.
- **b.** Service Restrictions—Each secondary distributor street shall be designed so that no section of it will convey a traffic volume greater than five hundred (500) ADT. Each half of a secondary distributor loop street may be regarded as a single secondary distributor street in which case a total ADT of one thousand (1,000) is permitted.
- c. Right-of-Way Width—fifty (50) feet
- **d. Travel Lanes**—All secondary distributor streets shall be provided with two (2) continuous travel lanes within which parking is not permitted.
- e. Design Standards—Travel lane widths shall be determined on the basis of the intensity of development proposed and the manner in which parking shall be provided as indicated in Figure 3-5.

## Figure 3-5 Secondary Distributor Streets

Secondary Distributor Streets						
Design Factors			Street Standards			
Development Type Fronting On Street	Parking					
	On-Lot	On-Street/ Spillover	Travel Lane <sup>I</sup> Width	Parking Lane Width	Total Cartway Width	Individual Driveway Access
Permanent open space, no residential frontage	None	None	10 to 11 feet	n/a	20 to 22 feet	n/a
Lots 2 acres <sup>2</sup> or more, deed restricted against further subdivision	On-Lot	None	10 to 11 feet	n/a	20 to 22 feet	Yes
Lot widths 100 feet or greater	On-Lot	None	10 to 12 feet	n/a	22 to 24 feet	Yes
Lot widths 40 to 100 feet	On-Lot	One Side	11 to 12 feet	8 feet	28 to 32 feet	Yes
Lot widths less than 40 feet w/rear alley access	On-Lot from alley	Two Sides <sup>3</sup>	10 to 12 feet	16 feet (8 each side)	36 to 40 feet	No
Lot widths less than 40 feet or no separate housing lots (apartments)	On-lot or off-street parking lot provided	Off-street parking lot provided	10 to 12 feet	n/a	20 to 24 feet	Yes (for parking lots)

The narrow width and absence of curbing add to the rural character of Deerfield Knoll.

If no curbing or flush curbing is being used, the minimum width should be used. If raised curbing is proposed, at least one additional foot of width above the minimum shown should be provided.

<sup>2</sup> *Performance Streets* uses a minimum lot size of five acres.

<sup>3</sup> A single parking lane may be provided if houses front on only one side of the street. In such cases, the total cartway width may be reduced by eight (8) feet to a width of 28 to 32 feet.

## Cluster Developments Exhibiting This Design Feature

- 1: Ridgelea, p. 14
- 6: Deerfield Knoll, p. 24
- 7: Marsh Harbour, p. 26
- 9: Uwchlan Woods at Williamsburg, p. 30
- 11: Parke Farm, p. 34
- 12: Sagamore, p. 36
- 14: The Greens at Penn Oaks, p. 40
- 15: Brandywine at Thornbury, p. 42
- 16: Brandywine River Estates, p. 44
- 17: Birmingham Hunt, p. 46
- 18: Reserves at Chaddsford, p. 48
- 19: Oakdale, p. 50
- 20: Country Club Valley, p. 52
- 22: Coniston, p. 56
- 25: Villages at Penn Ridge, p. 62

#### 3. Primary Distributor Streets

a. Definition—The primary distributor street is the highest order of street that can be classified as residential and will carry the largest volume of traffic at higher speeds. This level of street is unsuitable for providing direct access to homes and such access should be avoided.

#### b. Service Restrictions

- Primary distributor streets shall be required when the ADT anticipated on the street exceeds the limits for residential secondary distributor streets. If the anticipated ADT exceeds three thousand (3,000) the street shall be classified as a higher order than a primary distributor and the township, upon recommendation of their Engineer, shall determine the required design standards.
- (2) On-street parking shall be prohibited on primary distributor streets.
- (3) Primary distributor streets should be designed to have no residential lots fronting on them. However, in no case shall the percent of total length of the primary distributor street with residential frontage on and taking access from the street exceed the following:

ADT Level	Allowable Access Frontage		
1,000 to 1,199	20%		
1,200 to 1,599	10%		
1,600 to 1,999	5%		
2,000+	0%		

- c. Right-of-Way Width—sixty (60) feet
- **d. Travel Lanes**—All primary distributor streets shall be provided with two (2) continuous travel lanes.
- e. Design Standards Travel lane widths shall be based upon anticipated average daily trips as follows. The wider of the two lane widths shall be used when raised curbs are proposed.

Average Daily Trips (ADT)	Travel Lane Width	Total Cartway Width
2,000 ADT or less	10 to 11 feet	20 to 22 feet
More than 2,000 ADT	11 to 12 feet	22 to 24 feet

#### 4. Alleys

#### a. Definition

An alley is a special type of street which provides a secondary means of access to lots.

#### **b.** Service Restrictions

Alleys shall be permitted under the follow-ing circumstances:

(1) Frontage lot widths are sixty (60) feet or less.

Note: This width may be increased to allow for the use of alleys in a greater number of circumstances.

- (2) Frontage on an alley shall not be construed to satisfy the requirements of this ordinance for frontage on an approved street.
- (3) Parking shall not be permitted within the alley right-of-way.
- (4) Alley length shall not exceed six hundred and sixty (660) feet.

Note: This length may be increased to allow for the use of alleys in a greater number of circumstances.

### c. Right-of-Way Width

Dedicated: thirty-three (33) feet Undedicated: sixteen (16) feet

#### d. Paved Width

Dedicated: sixteen (16) feet Undedicated: twelve (12) feet

#### e. Travel Lanes

All secondary distributor streets shall be provided with two (2) continuous travel lanes within which parking is not permitted.

#### f. Building Setbacks from Alley

Garages or parking stalls shall be set back a minimum of fifteen (15) feet from the centerline where the right-of-way width is sixteen (16) feet and set back a minimum of eighteen (18) feet where the right-of-way width is thirty-three (33) feet.

## Additional Sources of Information

"Residential Street Design," Tool #57, Community Planning Handbook, Volume I, CCPC, 1997.

Circulation Handbook, Local Government Handbook #5, CCPC, 1994.

Residential Streets, Urban Land Institute, Second Edition, 1990.

Performance Streets: A Concept and Model Standards for Residential Streets, Bucks County Planning Commission, Doylestown, PA, 1980.

## Boulevards Alternative entrance design

## **Design Element**

An entrance road designed as a landscaped boulevard is an attractive feature found in many of the successful cluster subdivisions. While this might not be appropriate in rural areas where the location and entrance to the subdivision should be more subtle, it works well in suburban or transitional areas.

## **Ordinance Considerations**

A key requirement is the provision of trees and other landscaping in the center portion of the boulevard. Standards for a boulevard should be included in the street design section of the subdivision and land development ordinance.

The sample language on page 128 establishes standards for the design and landscaping of boulevards.



The historic allee of trees and wide boulevard create an elegant entrance to Pickering Glen.



This boulevard entrance creates a separation from Route 52 and the residential housing in Sagamore.



Landscaping enhances the boulevard entrance to the Ponds at Woodward.



The boulevard entrance to Marsh Harbour reduces the visual impact of the entrance on the adjacent roadway and enhances access management.

#### Cluster Developments Exhibiting This Design Feature

- 2: Kimberton Greene, p. 16
- 3: Pickering Glen, p. 18
- 5: Waynesborough Woods, p. 22
- 6: Deerfield Knoll, p. 24
- 7: Marsh Harbour, p. 26
- 10: The Woodlands, p. 32
- 12: Sagamore, p. 36
- 16: Brandywine River Estates, p. 44
- 19: Oakdale, p. 50
- 21: Tullamore, p. 54
- 23: Southridge, p. 58
- 25: Villages at Penn Ridge, p. 62

### Additional Sources of Information

Circulation Handbook, Local Government Handbook #5, CCPC, 1994.

## Sample Ordinance Language for Boulevards

### **Boulevard Design**

Boulevards may be provided as the primary entrance into a proposed development and shall meet the following design standards.

 The boulevard median shall be a minimum of six (6) to eight (8) feet in width.

> Note: The municipality should choose a specific minimum width. Six feet is wide enough to accommodate a single row of trees. However, a wider boulevard median would allow for additional landscaping.

- a. The median shall be landscaped with a permanent groundcover and appropriate street trees planted at intervals of not more than forty (40) feet. Plantings shall be shown on the landscaping plan submitted with the preliminary plan.
- b. The proposed landscaping shall not interfere with required sight distances as set forth in Section \_\_\_\_ of this ordinance.
- c. Maintenance responsibility for the median shall be determined prior to final plan approval and recorded on the deed.

2. The cartway on each side of the median shall have a minimum paved width of sixteen (16) feet and a minimum right-of-way width of fifty-two (52) feet.

Note: If on-street parking is to be permitted, the above numbers may be increased to 18 feet and 56 feet respectively and Subsection 4 below should be deleted. If a high volume of traffic is anticipated, on-street parking is not recommended — see preceding section for more information on street widths, parking, and traffic volume relationships.

- 3. At a minimum, the boulevard shall extend to the first intersection within the development. Median breaks shall be permitted beginning at two hundred (200) feet from the beginning of the boulevard.
- 4. Parking shall not be permitted along the boulevard.



Deerfield Knoll

## Street Lighting

### **Design Element**

Attractive and appropriately sized street lighting fixtures are an important design element to consider during subdivision review. Where light pollution is a concern, the minimum amount of lighting needed for safety should be provided. In suburban areas with a higher density or level of traffic, an increased level of lighting may be appropriate for safety considerations.

### **Ordinance Considerations**

The design of the light fixtures should be consistent with the character of the area. Proper lighting standards should apply to all proposed developments, not just cluster subdivisions. These standards are typically located in the subdivision and land development ordinance.

While a full lighting ordinance is too extensive to include in this publication, the municipality should ensure that their ordinance addresses lighting criteria including: illumination levels, lighting fixture design, control of nuisance and disabling glare, and installation. The municipality should require that a lighting plan be submitted with the preliminary plan application and that the plan include illustrations of the specific lighting fixtures proposed to be used in the development.

Most ordinances are fairly general in regard to the type of street light design required. An exception to this is the *West Whiteland Subdivision and Land Development Ordinance* which indicates the specific model of street lights to be used in the Exton Town Center Zoning District. A total of 39 design elements are described in the ordinance to ensure a cohesive character for the town center.

Street Lighting



Greens at Penn Oaks



Ponds at Woodward

Greens at Penn Oaks

## Sample Ordinance Language for Street Lighting

The following standards are excerpted from the North Coventry Township Subdivision and Land Development Ordinance and provide guidelines for the placement of fixtures within residential developments.

#### **Residential Development Fixture Placement**

- 1. For residential developments where lot sizes are equal to or average less than twenty-thousand (20,000) square feet, street lighting fixtures shall be provided as follows:
  - a. At the intersection of public roads with entrance roads to the proposed development.
  - b. Intersections involving proposed public or non-public major thoroughfare roads within the proposed development.
  - c. At the apex of the curve of any major thoroughfare road, public or non-public, within the proposed development, having less than three hundred (300) foot horizontal curve.
  - d. Cul-de-sac bulb radii.

- e. Terminal ends of center median islands having concrete-structure curbing, trees, and/or other fixed objects not having breakaway design for speeds of twenty-five (25) miles per hour or greater.
- f. At defined pedestrian crossings located within the developments.
- g. At other locations along the street as deemed necessary by the township.

See North Coventry Subdivision and Land Development Ordinance and Zoning Ordinance for complete standards.



Villages at Penn Ridge

#### **Cluster Developments Exhibiting This Design Feature**

Ridgelea, p. 14
Waynesborough Woods, p. 22
Deerfield Knoll, p. 24
Pinebrooke Village, p. 28
The Woodlands, p. 32
The Greens at Penn Oaks, p. 40
Villages at Penn Ridge, p. 62

## Additional Sources of Information

Outdoor Lighting, Planning Bulletin #49, CCPC, 1994.

IESNA Lighting Handbook, Illuminating Engineering Society of North America 9th Edition, 2000 or most current edition.

North Coventry Township Subdivision and Land Development Ordinance, Article VI, Design Standards, Section 628, Lighting Requirements and Design Standards, North Coventry, Chester County, Pennsylvania, updated 2003.

West Pikeland Township Lighting Ordinance 2000-02, March 20, 2000.

West Whiteland Township Subdivision and Land Development Ordinance, Part 7, Exton Town Center Design Standards, 1999. The following standards are excerpted from the West Pikeland Township Lighting Ordinance and provide guidelines for the design of light fixtures.

### Lighting Fixture Design

- 1. Fixtures shall be of a type and design appropriate to the lighting application.
- 2. For lighting horizontal tasks such as roadways, sidewalks, entrances, and parking areas, fix-tures shall meet IESNA "full-cutoff" criteria (no light output emitted above ninety (90) degrees at any lateral angle around the fixture).
- 3. The use of floodlighting, spotlighting, wallmounted fixtures, decorative globes and spheres, and other fixtures not meeting IESNA "full-cutoff" criteria, shall be permitted only with the approval of the board of supervisors, based upon applicability in retaining the rural character of the township and achieving acceptable glare control.
- 4. When requested by the township, fixtures shall be equipped with or be modified to incorporate light directing and/or shielding devices such as shields, visors, skirts or hoods to redirect offending light distribution and/or reduce direct or reflected glare.



Side-load garages reduce the impact of garage doors on building facades and entrances at the Villages at Penn Ridge.

## Alternative Parking Design Landscaping and reduction of impervious coverage

## **Design Element**

Appropriate parking standards are important in all types of subdivisions and land developments to ensure that excessive impervious surface is avoided while providing adequate parking for residents and their visitors. The landscaping of parking areas is also an important design consideration.

## **Ordinance Considerations**

Parking facilities and landscaping standards for parking lots can be dealt with through the general ordinance standards and need not be specific to cluster subdivisions.

One of the more difficult design issues within cluster subdivisions is parking on smaller lots. Where front facing garages are permitted on narrow lots, wide expanses of impervious surfaces may be created where driveways fill all or most of the front yard. This situation can be avoided by creating alleys with rear facing garages. See "Vehicular Facilities," page 125, for alley sample ordinance standards. Allowing for on-street parking or providing overflow parking areas for guests can also help to alleviate the paved front yard syndrome.



Porous pavers can accommodate overflow parking and reduce the amount of impervious surface coverage.

In most cases, cluster subdivisions will not require separate parking lots, as the parking can be provided for on the individual residential lots. Where lots are smaller, overflow or guest parking can be provided for with on-street parking if the street is appropriately designed. (See "Street Width" standards on page 119 for suggested on-street parking standards.) In the event that parking lots are needed, such as in a multi-family development, the municipality should review their current parking standards to ensure that landscaping and screening provisions are include for parking lots above a certain size (e.g., five spaces or more).

Allowing for porous pavement or paver blocks in the ordinance is another option for reducing the total impervious surface on the site. Porous pavement is a permeable surface paving material comprised of bituminous concrete mixtures that permit stormwater to infiltrate through tiny spaces. On the surface it looks the same as standard paving material. Paver blocks are pavers with openings that grass can grow through and which permit stormwater infiltration. Both of these types of paving are useful for overflow parking areas that are not as heavily used as the primary parking areas or driveways. In general, porous paving should not be subject to heavy vehicle traffic to prevent compaction or damage that would limit infiltration.



In this development, porous pavers were used to provide access to maintenance facilities.

#### **Comparison of Driveways**

The dwelling units and driveways in the images shown to the right are similar in scale and layout. Both images illustrate driveways that provide access to garage facilities. The image on the bottom, however, provided narrow driveways with landscaped strips and adjacent side yards to reduce the visual impact of the areas of macadam and the amount of impervious coverage. The driveways in the upper image appear to be wider than necessary to accommodate access to garage facilities and detract from the building facades.



#### **Cluster Developments Exhibiting This Design Feature**

5:Waynesborough Woods, p. 22 6:Deerfield Knoll, p. 24 9:Uwchlan Woods at Williamsburg, p. 30 11:Parke Farm, p. 34 14:The Greens at Penn Oaks, p. 40 17:Birmingham Hunt, p. 46 18:Reserves at Chaddsford, p. 48 19:Oakdale, p. 50 20:Country Club Valley, p. 52 21:Tullamore, p. 54 23:Southridge, p. 58 25:Villages at Penn Ridge, p. 62



#### **Additional Sources of Information**

Examples of porous pavement and paver blocks as well as many other innovative stormwater management facilities are included in the *Self-Guided Stormwater Best Management Practices* (BMP) *Tour*, published by the Chester County Conservation District, April 2002. (Phone 610-436-9182 or 610-696-5126) This document is also available on the CCCD website at www.chesco.org/conservation/bmp tour.htm.


- 138 Trails
- 144 Sidewalks

This section discusses issues relating to trails, sidewalks, and other pedestrian facilities.



Bridges provide connections and enhance the experience of the trail user.

# Trails

### **Design Element**

Pedestrian facilities should be designed to provide easy access to the open space and other community facilities available to residents. Trails through the open space allow residents to take advantage of the primary amenity of the cluster subdivision. Where designated in a municipal open space plan, public trail systems should be incorporated into the overall subdivision design.

*Linking Landscapes*, the Open Space Plan element of *LANDSCAPES*, includes an extensive discussion on trails and related issues in Chapter 12, "Regional Recreation Corridors." *Linking Landscapes* defines trails and paths separately, with paths being a subgroup of trails.

**Trails** are defined as an off-road facility with a permanent alignment that is designed and used for a variety of non-motorized forms of travel including walking, hiking, bicycling, cross-country skiing or horseback riding.

**Paths** are defined as a trail designed, constructed, maintained, and used primarily for one form of travel. Thus a "bike path" is an off-road facility that has been designed to be used primarily by bicyclists. Although paths may be designed for one mode of travel, they are often used by other types of users as well. Limiting them to a specific user may be difficult to enforce and is typically done on a voluntary basis.

## **Ordinance Considerations**

Trails and paths, in the context of a cluster subdivision, may be designated specifically for the use of the residents of the subdivision. Whether or not they are open to the general public will be determined during the subdivision review process.

Requirements for the provision of trails can be included in the general design standards of the subdivision and land development ordinance.



This segment of trail connects the sidewalk system of Sagamore to the adjacent residential development.



This trail system links the dwelling units with the extensive open space in Charlestown Hunt.



This trail system in Birmingham Hunt meanders through the development and begins at well-defined trail heads.



The trail loop in Brandywine River Estates provides access through the preserved open space.

## Sample Ordinance Language for Trail Facilities

# Example 1: Ordinance Requirements for Trails and Paths<sup>1</sup>

- 1. At the discretion of the board of supervisors, with recommendations from the planning commission, a system of bicycle, equestrian, and/or pedestrian trails or paths for public use generally unrelated to and separate from streets shall be established and secured by dedication or easement.
  - a. Trails shall be consistent with the township open space plan or any other applicable plans specified by the township so as to encourage the formation of an interconnecting trail network both within and beyond the township.
  - b. Trails normally shall not exceed ten (10) feet in width and, at the option of the applicant, shall be located adjacent to existing or proposed lot lines, or in such a manner as to minimize any obstruction to the development.
  - c. Existing trails may be relocated if a connection with a trail on an adjoining property is thereby established.
    - Adapted from sample language in *Environmental Management Handbook*, Appendix A: Model Subdivision and Land Development Ordinance, Environmental Management Center, Brandywine Conservancy, 1995.

- 2. To facilitate circulation, pedestrian paths may be required to serve the interior of developments and link to outside trail networks.
  - a. Such paths shall be a minimum of four (4) feet in width and shall be of a durable surface satisfactory to the board of supervisors.

Note: The municipality should consider increasing this width to a minimum of 6 to 8 feet, depending on the anticipated use of the trail.

b. Where the paths are not within a street right-of-way, a separate right-of-way at least ten (10) feet wide shall be designated on the subdivision or land development plan.

> Note: The municipality should consider increasing the minimum right-of-way width to 26 to 30 feet depending on the anticipated use of the trail. This width will also ensure a buffer between residential uses and the trail. The Chester County Parks and Recreation Department can be consulted for additional information.

Pedestrian Facilities Trails

c. As appropriate, the paths shall be maintained by the homeowners association (when the paths traverse common areas) or by the abutting property owners (when the paths traverse existing lots).

# Example 2: Ordinance Requirements for Trails

Pocopson Township is proactive in the development and protection of their trail system. The Pocopson Township Subdivision and Land Development Ordinance (amended 2002) includes the following language, relating specifically to trails:

A. ...In addition, trails shall be provided in cluster developments to provide access to and across common open space areas. The board of supervisors shall also require land proposed for subdivision or land development to provide trails in accordance with the comprehensive Trail and Bikeway System (as defined in Section 106 of the Zoning Ordinance) or provide links to the system, and to identify such public use trails on the plan.

Section 106 of the Pocopson Township Zoning Ordinance reads as follows:

#### **Trail and Bikeway System**

An integrated system of trails and bikeways designed to link all sections of the township by paralleling all streets and roads, either within the rights of way of such streets and roads or off road within trail easement corridors. The system may be generally delineated by a trails map, but precise location of trails and bikeways shall be determined during subdivision and land development processes or prior to their acquisition. No motorized vehicles shall be permitted to use such trails.



This trail provides a recreational facility and a link to the past as it encircles a portion of the Brandywine Battlefield preserved in Brandywine Hunt.

#### **Cluster Developments Exhibiting** This Design Feature

- 2: Kimberton Greene, p. 16
- 3: Pickering Glen, p. 18
- 4: Charlestown Hunt, p. 20
- 12: Sagamore, p. 36
- 15: Brandywine at Thornbury, p. 42
- 16: Brandywine River Estates, p. 44
- 17: Birmingham Hunt, p. 46

#### Example 3: Ordinance Requirements for Trails

In NLT'S "Four Step Design Process" for conservation subdivision design,<sup>2</sup> the street alignment and trail network is established in Step Three of the process, after the delineation of the open space and the location of the house sites in Steps One and Two. Language specific to trail delineation in the process is stated as follows in their model subdivision ordinance standards:

"A tentative network of trails shall also be shown, connecting streets with various natural and cultural features in the conserved greenway (open space) lands. Potential trail connections to adjacent parcels shall also be shown, in areas where a municipal trail network is envisioned." Section 601.C (Planning and Design Standards) of NLT'S Growing Greener model subdivision and land development ordinance also includes the following design standards for trail location and use:

- 1. When a subdivision or land development proposal is traversed by or abuts an existing trail customarily used by pedestrians and/or equestrians, the governing body may require the applicant to make provisions for continued recreational use of the trail.
- 2. The applicant may alter the course of the trail within the tract for which development is proposed under the following conditions:
  - a. The points at which the trail enters and exits the tract remain unchanged.
  - b. The proposed alteration exhibits quality trail design according to generally accepted principles of landscape architecture.
  - c. The proposed alteration does not coincide with a paved road intended for use by motorized vehicles.

<sup>2</sup> Growing Greener: A Conservation Planning Workbook for Municipal Officials in Pennsylvania, prepared for the Pennsylvania Department of Conservation and Natural Resources by the Natural Lands Trust, Media, PA, September 2001.

- 3. When trails are intended for public or private use, they shall be protected by a permanent conservation easement on the properties on which they are located. The width of the protected area in which the trail is located shall be a minimum of ten (10) feet. The language of the conservation easement shall be to the satisfaction of the governing body upon recommendation of the municipal solicitor.
- 4. The land area permanently designated for trails for public use may be credited toward the greenway land (open space) requirement described in Section 104 of the zoning ordinance.
- 5. An applicant may propose and develop a new trail. If said trail is available for use by the general public and connects with an existing trail, the land areas protected for said trail may be credited toward the open space requirement described in Section 104 of the zoning ordinance.
- 6. Trail improvements shall demonstrate adherence to principles of quality trail design.
- 7. Trails shall have a vertical clearance of no less than ten (10) feet.
- 8. Width of the trail surface may vary depending upon the type of use to be accommodated, but in no case shall it be less than three (3) feet or greater than six (6) feet.
   8. Width of the trail surface may vary depending upon the type of use to be accommodated, but in no case shall it be less than three (3) feet or greater than six (6) feet.

9. No trail shall be designed with the intent to accommodate motorized vehicles.

#### Trail Plan

The best way to implement a municipal-wide trail network is to develop and adopt a Trail Network Plan. Such a plan would ensure a safe, efficient, and enjoyable network is created over time. Of particular importance is establishing the desired location of trails prior to the submittal of development proposals so that the desires of the community are clear to the developer. Tool #58 of the CCPC Community Planning Handbook, details the steps necessary to establish a trail network plan. Such a plan could be adopted as part of the municipal comprehensive plan, open space plan, or as a stand-alone plan. The basic steps for creating a trail plan include:

- 1. Inventory existing trail system.
- 2. Identify pedestrian and bicycle travel corridors.
- 3. Evaluate and select specific route alternatives.
- 4. Consider design treatments.
- 5. Select appropriate facility options.

Tool #58, "Pedestrian and Bicycle Facilities Design," should be consulted for details.

# Additional Sources of Information

The Official Map, Planning Bulletin #48, CCPC, 1994. (Useful for trail designation and preservation.)

"Official Map," Tool #12, Community Planning Handbook, Volume I, CCPC, 1997.

"Greenways," Tool #28, Community Planning Handbook, Volume I, CCPC, 1997. (Trails may be located within a greenway system.)

"Pedestrian/Bicycle Facilities Design," Tool #58, Community Planning Handbook, Volume II, CCPC, 1999.

Linking Landscapes: A Plan for the Protected Open Space Network in Chester County, PA, CCPC, 2002.

Environmental Management Handbook, Appendix A: Model Subdivision and Land Development Ordinance, Environmental Management Center, Brandywine Conservancy, 1995.

Growing Greener: A Conservation Planning Workbook for Municipal Officials in Pennsylvania, prepared for the Pennsylvania Department of Conservation and Natural Resources by the Natural Lands Trust, Media, PA, September 2001. Pedestrian Facilities Sidewalks

# Sidewalks

## **Design Element**

The need to provide sidewalks will depend on the size and density of the proposed subdivision. Where subdivision roads have very low traffic, the addition of sidewalks may be an unneeded expense and add to the impervious surface. On busier roads or where the development is more suburban in nature, sidewalks should be provided and should connect to the open space trail system.

## **Ordinance Considerations**

The following requirements for the provision of sidewalks can be included in the general design standards of the subdivision and land development ordinance. The following sample language includes the standards for determining when sidewalks are required and their minimum width.



Pedestrian facilities and amenities create destinations for residents of Charlestown Hunt.



Sidewalks enhance the neo-traditional design elements in developments such as Eagleview and Ridgelea.



Sidewalks provide a pedestrian circulation system within large developments and small developments like Pinebrooke.



The location of sidewalks should be carefully designed to avoid conflicts with other facilities such as driveways.

Pedestrian Facilities Sidewalks

#### **Cluster Developments Exhibiting** This Design Feature

Ridgelea, p. 14
 Pickering Glen, p. 18
 Charlestown Hunt, p. 20
 Marsh Harbour, p. 26
 Pinebrooke Village, p. 28
 Uwchlan Woods at Williamsburg, p. 30
 The Woodlands, p. 32
 Sagamore, p. 36
 The Jefferson at Westtown, p. 38
 The Greens at Penn Oaks, p. 40
 Brandywine at Thornbury, p. 42
 Villages at Penn Ridge, p. 62



Design elements such as street lighting, benches, and planting strips create a pedestrian-friendly atmosphere that will enhance the experience for the user in the Villages at Penn Ridge.

## Sample Ordinance Language for Sidewalk Facilities

#### Sidewalks <sup>3</sup>

- Paved sidewalks shall be provided on both sides of all streets in all commercial districts, on both sides of all streets within one-thousand (1,000) feet of any school, and on both sides of all streets where the lot size is less than one (1) acre.
  - a. Sidewalks may be required on only one side of the street in residential subdivisions where residential lots are located on only one side of the street.
  - b. Sidewalks shall be required in non-residential developments unless it can be shown, to the satisfaction of the board of supervisors, that pedestrian traffic does not follow or mix with vehicular traffic and is not likely to in the future.

Sidewalks shall have a minimum width of four

 (4) feet except along collector and arterial
 streets and adjacent to schools, shopping centers, community facilities, or other similar uses
 as determined by the board of supervisors,
 where the sidewalk shall be a minimum of five
 (5) feet wide.

Note that a complete set of standards would also include the minimum construction specifications.

# Additional Sources of Information

"Pedestrian/Bicycle Facilities Design," Tool #58, Community Planning Handbook, Volume II, CCPC, 1999.

Single Family Residential Pedestrian Linkages, Subdivision Note #17, CCPC, 1992.

North Coventry Township Subdivision and Land Development Ordinance, North Coventry, Chester County, Pennsylvania, 1999, updated 2003.

<sup>3</sup> Adapted from North Coventry Township Subdivision and Land Development Ordinance, North Coventry, Chester County, Pennsylvania, 1999, updated 2003.

# Appendix A

# **Glossary** Definition of Terms

#### Aquifer

A geologic formation, group of formations, or part of a formation that contains sufficient saturated, permeable material to yield useful quantities of ground water to wells and springs. (*Watersheds*)<sup>1</sup>

#### **Best Management Practices (BMPs)**

Methods, measures, or practices to prevent or reduce surface runoff and/or water pollution, including but not limited to, structural and non-structural controls, operation and maintenance procedures, other requirements and scheduling and distribution of activities. (*Watersheds*)

Where noted, glossary terms are taken from the County policy plan elements *Watersheds* and *Linking Landscapes*.

#### Boulevard

A street type which provides for two directions of vehicular movement divided by a median planting strip.



Boulevard entrance to development

#### Buffer

Open spaces, landscaped areas, fences, walls, berms or any combination thereof used to physically separate or screen one used property from another so as to visually shield or block noise, lights or other nuisances. (*Linking Landscapes*)



Buffer adjacent to a roadway

#### Cartway

The surface of a street or alley available for vehicular traffic.



#### **Cluster Development**

An arrangement of residential structures that allows for grouping the structures by reducing lot area and yard requirements and incorporating the remaining area as open space.



Source: Chester County Planning Commission, 2003.

#### **Comprehensive Plan**

A long-range policy plan intended to guide the growth and development of a municipality.

#### **Conditional Use**

A use which is generally not appropriate to a particular zoning district as a whole, but which may be suitable in certain localities within the district only when specific conditions and factors prescribed for such cases within the municipal zoning ordinance are present. Conditional uses are allowed or denied by the governing body after a public hearing and review and comments from the planning commission.

#### **Conventional Development**

Individual residential lots that encompass the entire development tract or area without retaining common open space associated with cluster development.



Source: Chester County Planning Commission, 2003.

#### Density

The total land area of a tract divided by the total number of dwellings to be housed thereon, expressed in dwelling units (DU) per acre.

#### **Detention/Retention Basin**

Impoundment constructed to detain/retain stormwater for extended periods of time and allow for the retention of pollutants in the pond through deposition of sediments and attached pollutants. (*Watersheds*)



Landscaped detention pond

#### **Dwelling Unit**

A room or rooms within a building connected together, constituting a separate independent housekeeping establishment for one (1) family only, for owner occupancy or for rental, lease or other occupancy, on a weekly or longer basis, physically separated from any other rooms or dwelling units, and containing independent lavatory, cooking and sleeping facilities. This includes, but is not limited to: single-family homes, apartments, townhouses, duplexes, and twins.

#### Floodplain

That portion of a stream valley adjacent to the channel that is created by erosion and sediment deposited from the stream and covered with water when the stream overflows its banks at flood stage. Also, the nearly level land situated on either side of a channel that is subject to overflow flooding. (*Watersheds*)



Source: Chester County Planning Commission, 2003.



Hardscaped sitting area

#### Hardscape

The inanimate elements of landscaping, especially any masonry work. For instance, stone walls, brick patios and tile paths are considered part of the hardscape. Anything used in landscaping that is not part of the softscape can be considered a hardscape element, including accents such as water fountains and benches. See Softscape.

#### Hedgerow

A linear plant community dominated by trees and/or shrubs. Hedgerows often occur along roads, fence lines, property lines, or between fields, and may occur naturally or be specially planted (e.g., as a windbreak).

#### Homeowners Association (HOA)

A community association, other than a condominium association, that is organized in a development in which individual owners share common interests and responsibilities for cost and upkeep of common open space or facilities. (*Linking Landscapes*)

#### Human Scale

The proportional relationship of a particular building, structure, or streetscape element to the human form or function.

#### **Impervious Surface**

Ground cover that does not allow for infiltration of water (e.g., roofs, paved parking lots, and roads) and which increases the volume and speed of runoff after a rainfall. See Pervious Surface.(*Watersheds*)

#### Landscape Architect

A professional who practices the art of arranging or modifying the features of a landscape (an urban area, etc.) for aesthetic or practical purposes and has graduated with degree in landscape architecture from an accredited school of landscape architecture.

#### Lawn

A vegetated landscape, usually surrounding buildings, that is regularly mowed and is dominated by one or a small number of grass species. (*Linking Landscapes*)

#### Meadow

A naturally occurring or man-made vegetated landscape dominated by grasses, wildflowers, weeds and other herbaceous plants, which are allowed to grow to seed, or are mowed or grazed seasonally. (*Linking Landscapes*)



Hedgerow and meadow

#### **Mountable Curbs**

A relatively low (2 to 4 inch) curb that allows larger vehicles to negotiate circles while maintaining enough height to deflect passenger cars. Mountable curbs are recommended around a cul-de-sac island to allow oversize vehicles to maneuver around the cul-de-sac.

#### Open Space, Recreation, And Environmental Resources Plan (OSRER)

In Chester County, the municipal-level open space plan. (*Linking Landscapes*)

#### **Native Plant Species**

A species of plant that currently or previously inhabited or grew in a specified location, and which was not introduced to that location as a result of human activity, either intentional or accidental. The term "native" species generally refers to a species whose range was located within a large area like a continent or a nation. The term "indigenous" species is typically used to refer to a species whose original range extended into a smaller area like a state, county, or watershed. (*Linking Landscapes*)

#### **Open Space**

In general, a large undeveloped tract or area of land that is designated for public or private use. For purposes of this publication, any land of any size that is not covered by buildings or pavement, and may include lawns, fields, or other vegetated areas of previously developed properties or farms. (*Linking Landscapes*)

#### **Open Space, Protected**

Land or water areas that have little or no development; are used for recreation or preserving cultural or natural resources, including productive agricultural soils; and are protected from development either permanently or on a long-term basis. (*Linking Landscapes*)

#### **Open Space, Unprotected**

Open space that is not rigorously protected from development either through an easement enforced by the third party (other than the owner and the seller) or through in-fee acquisition where the owner has committed to retain the property in perpetuity as an undeveloped property. (*Linking Landscapes*)

#### **Pedestrian-Friendly**

An area, walkway, or similar feature that is designated for use by pedestrians because of its design, paving pattern, separation from vehicular circulation or its human scale.

#### **Pervious Surface**

Any material that permits full or partial absorption of stormwater into previously unimproved land. See Impervious Surface. (*Linking Landscapes*)

#### **Porous Pavement**

A permeable surface paving material comprised of porous bituminous concrete mixtures that permit stormwater to infiltrate through the pavement's interstitial spaces. Porous pavement may also consist of an arrangement of interlocking, prefabricated, perforated blocks, laid on a soil base and providing a stable pervious surface for low-volume vehicular use.



Porous pavers used for overflow parking

#### **Recreation, Active**

Recreation activities that have a noticeable impact on the surrounding environment and are usually rigorously athletic and not quiet. May include individual or team sports, child's play, large picnics, playground play, and recreational events with a high density of people. (*Linking Landscapes*)

#### **Recreation**, **Passive**

Recreation activities that are usually quiet and not rigorously athletic, and have a low impact on the surrounding environment. May include walking, hiking, fishing, bird watching, and quiet picnicking. (*Linking Landscapes*)

#### Right-Of-Way (ROW)

Land reserved for an easement, street, alley, walkway, crosswalk or other public or private purpose.

#### Riparian

Pertaining to anything connected with or immediately adjacent to the banks of a stream or other body of water. (*Watersheds*)

#### **Riparian Buffers**

An area of trees, usually accompanied by shrubs and other vegetation, adjacent to a body of water and managed to maintain the integrity of stream channels and shorelines to 1) reduce the impact of upland sources of pollution by trapping, filtering, and converting sediments, nutrients, and other chemicals, and 2) supply food, cover, and thermal protection to fish and other wildlife. (*Watersheds*)

The riparian buffer can be divided into three zones of protection:

Zone 1 (Undisturbed Forest)–A streamside zone immediately adjacent to the stream with native vegetation consisting of predominantly trees and shrubs and undergrowth (herbaceous layer). This zone provides tree and other vegetation to stabilize stream banks, shade the stream, supply organic matter for food, and shelter for aquatic living resources, infiltrate overland runoff, remove sediments and nutrients through filtering and uptake by the vegetation, and a margin of protected land area for movement and meandering of the stream channel.

Zone 2 (Managed Forest)—A zone that is adjacent to the undisturbed forest, with native vegetation consisting of trees, grasses, etc. This zone provides infiltration of overland runoff, removes nutrients and sediments by filtering overland runoff through the vegetated ground cover, removes nutrients from infiltrated runoff and shallow ground water by roots of trees and plants. This zone must be "managed" or maintained to exclude invasive



Source: Chester County Planning Commission, 2003.



Source: Watersheds: An Integrated Water Resources Plan for Chester County, Pennsylvania and its Watersheds, prepared by the Chester County Water Resources Authority, West Chester, Pennsylvania, 2002.

species and to periodically prune the trees and shrubs to continue vigorous growth that results in continued uptake of nutrients.

Zone 3 (Filter Zone)–A zone forming the upland side of the buffer and immediately adjacent to the managed forest zone consisting of grasses, forbs, and dispersion features. This zone provides for surface runoff to be dispersed to shallow sheet flow prior to entering the forested zone to enhance infiltration and reduce erosion. Vegetation and dispersion features (such as level spreaders) remove sediments from the runoff and slow the velocity of the runoff to reduce erosion and enhance infiltration through the forested zone. Vegetation also removes nutrients through uptake by the roots. This zone must also be "managed" by occasional (annual or biannual) mowing (to encourage continued plant growth and nutrient uptake) and to maintain dispersion features.

#### **Scenic Viewshed**

A physiographic area composed of land, water, biotic, and cultural elements which may be viewed and mapped from one or more viewpoints and which has inherent scenic qualities and/or aesthetic values as determined by those who view it.

#### Screen/Screening

A visual shield obscuring one abutting or nearby structure or use from another by fencing, walls, berms, densely planted vegetation, or a combination thereof.



Source: Chester County Planning Commission, 2003.

#### Setback

A line parallel to and at a prescribed distance from a public or private street, which determines an area within which no structure may be erected.





#### Softscape

The animate (living), horticultural elements of landscaping, i.e., plants. Softscape elements are complemented by hardscape elements, such as stone walls, tile patios and brick walkways. See Hardscape.

#### **Special Exception**

A use which is not permitted as a right, but which, when deemed suitable, with or without the imposition of conditions or restrictions under applicable standards, may be allowed by the zoning hearing board after public hearing.

#### **Steep Slopes**

Those areas of land where the grade is fifteen (15%) percent or greater. Steep slopes are further divided into two categories:

- Moderately steep slopes—Those areas of land where the grade is fifteen (15%) to twentyfive (25%) percent.
- Very steep slopes—Those areas of land where the grade is twenty-five (25%) percent or greater.

#### Streetscape

A design term referring to the elements that constitute the physical makeup of a street and that, as a group, define its character, including building frontage, street paving, street furniture, landscaping, trees and other plantings, awnings, marquees, signs, and lighting.

#### Trail

An off-road facility with a permanent alignment that is designed and used for a variety of non-motorized forms of travel including walking, hiking, bicycling, cross-country skiing or horseback riding. (*Linking Landscapes*)

#### Variance

Permission, approval or authorization granted by the zoning hearing board constituting a modification of or deviation from the exact provisions of the zoning ordinance as applied to a specific parcel of property and not to be construed as a precedent.

#### Wetlands

Low-lying areas inundated or saturated by water at a frequency and duration sufficient to support wetland vegetation (e.g., wetlands include such areas as swamps, marshes, and wet meadows). Wetlands remove pollutants through a series of chemical, physical, and biological mechanisms. (*Watersheds*)

#### Woodlands/Forest

A classification of land type predominated by trees and woody vegetation and characterized by high structural diversity, greater than 25 percent canopy shading, and by the significant accumulation of organic duff on the soil. (*Watersheds*)

# Appendix B Elements of a Cluster Ordinance Sample Language

This appendix provides the basic framework of a cluster ordinance. There are several sources for cluster ordinance language available to municipalities. One source is Tool #4 of the CCPC *Community Planning Handbook, Volume I.* This sample ordinance provides language for a basic cluster development option. A second source of ordinance language is the Natural Lands Trust (NLT) publication, *Growing Greener: A Conservation Planning Workbook for Municipal Officials in Pennsylvania.* The "Open Space Design Options" developed by the Environmental Management Center of the Brandywine Conservancy and adopted in several Chester County communities provides another source of possible cluster language. (The sample language provided in this appendix draws from all of these sources.)

It is highly recommended that a municipality wishing to add or update their cluster provisions work with a qualified planning consultant to tailor the ordinance language for their own particular needs.

The outline below provides a description of the sections that should be included in the cluster provisions of a zoning ordinance.<sup>1</sup> Sample language is included to provide more specific guidelines for creating a cluster ordinance. Note that many of the zoning ordinance and subdivision and land development ordinance provisions described in Chapter Three are not specific to the cluster standards, but can be applied universally to all types of residential developments.

<sup>&</sup>lt;sup>1</sup> The NLT standards also include extensive revisions to the subdivision ordinance outlining a specific four-step review process to be undertaken as part of the plan review process. The *Growing Greener* workbook should be consulted for details of those provisions.

#### Purpose

This section of the ordinance outlines the purposes of allowing cluster subdivisions as a development option. Ideally, this section should also refer to the goals of the municipal comprehensive plan and open space plan to provide additional policy support for the implementation of the cluster provisions and treatment of the required open space.

#### Sample Language Source

Adapted from North Coventry Township Zoning Ordinance (1996), Article XIV, Residential Design Options, conservation and open space design options adopted December 2002.

### Section 1.0—Purpose

In addition to the general goals listed in the statements of Purpose, Section 101, and Community Development Objectives, Section 102, the purpose of this article is:

- 1.1 To conserve open land, including those areas containing unique and sensitive natural resources such as woodlands, steep slopes, streams, floodplains, and wetlands, by setting them aside from development.
- 1.2 To provide greater design flexibility and efficiency in the siting of services and infrastructure, including the opportunity to reduce the length of roads, utilities, and the amount of paving and impervious surface required for residential development.
- 1.3 To reduce erosion and sedimentation through the retention of existing vegetation, the minimization of development on steep slopes, and the reduction of earth disturbance.
- 1.4 To implement the policies of the North Coventry Comprehensive Plan (2001) and Open Space, Recreation, and Environmental Resources Plan (1993) to protect environmentally sensitive areas, address recreation and open space needs, and to preserve the township's scenic and rural character.

- 1.5 To provide development options for landowners which minimize impacts on sensitive environmental resources, reduce disturbance of natural and cultural features, and conserve scenic views.
- 1.6 To provide flexible standards for addressing varying circumstances and interests of individual landowners and the unique characteristics of their properties.

## Section 2.0—Qualifying Conditions

To be eligible for development under the Residential Open Space/Cluster Design Option, a site must, at a minimum:

- 2.1 Be located within a (residential) zoning district(s).
- 2.2 Be at least (ten (10) acres) in area and capable of supporting at least (five (5) dwelling units) per the requirements of these regulations.
- 2.3 Consist of either:
  - 2.3.1 A single parcel of land, or
  - 2.3.2 Multiple contiguous parcels undivided. In the case of multiple contiguous parcels, all applicable parcels shall be developed according to a single plan and with common authority and common responsibility. The municipality may require evidence of an agreement between all owners of included parcels demonstrating binding commitment to common development of the parcels.

Additional "Qualifying Conditions" to consider for inclusion: Source: Adapted from Kennett Township Zoning Ordinance (1985, as amended), Article XV, Open Space Design Options, updated and re-adopted June 1999. Technical assistance for this portion of the ordinance was provided to the township by the Environmental Management Center of the Brandywine Conservancy, Chadds Ford, PA.

- 2.4 The applicant shall demonstrate to the satisfaction of the township that adequate water supply can be provided for the intended residential and open space uses and for fire emergency purposes.
- 2.5 The applicant shall demonstrate to the satisfaction of the township that adequate sewage treatment and disposal facilities can be provided, consistent with the Township Sewage Facilities (Act 537) Plan, and further, subject to demonstration of compliance with all applicable regulations of the Chester County Health Department and the Pennsylvania Department of Environmental Protection.
- 2.6 The proposed development shall be generally consistent with the township comprehensive plan and the Chester County comprehensive plan, *LANDSCAPES*, as applicable.

#### **Qualifying Conditions**

Qualifying conditions specify the zoning districts in which the cluster subdivision is permitted and the minimum tract size required to use the option. The minimum tract should not be exceedingly large. A successful cluster development can occur on a tract as small as ten acres. Allowing cluster subdivisions on smaller tracts may be particularly useful when the tract is located adjacent to another development with preserved open space. In some municipalities, no minimum tract size is required.

#### Sample Language Source

Adapted from "Open Space/ Cluster Development," Tool #4, Community Planning Handbook, Volume I, CCPC, 1997.

#### Note

The "qualifying conditions" can be included in the individual zoning district articles where the use will be permitted. The provisions shown here are designed to be included in the cluster article. The articles for the individual districts should also indicate if the cluster subdivision is permitted byright, special exception, or conditional use and the minimum tract size (if applicable) required.

#### **Permitted Uses**

This section lists the dwelling types permitted (i.e., singles, twins, townhouses, etc.) within the cluster subdivision. The types of dwelling units permitted may vary depending upon the zoning district in which the cluster subdivision is proposed. Other permitted uses would include accessory uses typically allowed in conjunction with a residential use. (The "Permitted Uses" section can also be handled through the individual zoning district articles rather than within the cluster subdivision standards.)

#### Sample Language Source

Adapted from proposed ordinance language drafted by Chester County Planning Commission for West Pikeland Township, March 2002 and based on NLT's *Growing Greener* model. For a full set of village design standards, consult *Growing Greener*: A *Conservation Planning Workbook for Municipal Officials in Pennsylvania*, prepared for the Pennsylvania Department of Conservation and Natural Resources by the Natural Lands Trust, Media, PA, September 2001.

## Section 3.0—Permitted Uses

Note: The three cluster design options that follow allow for three different use combinations: (3.1) single-family detached; (3.2) mix of single and multi-family dwellings, and (3.3) residential with limited commercial in a village setting.

#### 3.1 Conservation Design Option

This design option allows for higher density single-family residential development with at least sixty-five (65) percent of the tract reserved for open space.

- 3.1.1 The following uses shall be permitted within this option:
  - a. Single-family detached dwellings.
  - b. Uses permitted in the designated open space shall be as indicated in Section \_\_\_\_.

- 3.1.2 The following uses shall also be permitted within this option:
  - a. Minor home occupations (by-right), subject to the provisions of Section \_\_\_\_.
    (Note: These blank sections refer to the Supplemental Use Standards.)
  - Major home occupations (by special exception), subject to the provisions of Section \_\_\_\_.
  - c. Accessory uses shall be permitted subject to the provisions of Section \_\_\_\_\_ of this ordinance.

#### 3.2 Cluster Subdivision Design Option

This design option provides for a range of residential dwelling types at a higher density with at least fifty (50) percent of the tract reserved for open space.

- 3.2.1 The following uses shall be permitted within this option:
  - a. Single-family detached dwellings.
  - b. Single-family semi-detached dwellings (twins).
  - c. Single-family detached dwellings (townhouses), limited to a maximum of six (6) dwellings per structure.
  - d. Multi-family dwellings (apartments), limited to a maximum of eight (8) dwellings per structure.
  - e. Uses permitted in the designated open space shall be as indicated in Section \_\_\_\_.

- 3.2.2 The following uses shall also be permitted within this option:
  - a. Minor home occupations (by-right), subject to the provisions of Section \_\_\_\_.
  - Major home occupations (by special exception), subject to the provisions of Section \_\_\_\_.
  - c. Accessory uses shall be permitted subject to the provisions of Section \_\_\_\_\_ of this ordinance.

#### 3.3 Village Design Option

This option allows for a variety of residential dwelling types designed and arranged to incorporate the design principals of traditional villages. At least seventy-five (75) percent of the tract is reserved for open space. Small scale commercial uses may also be incorporated into the village option.

- 3.3.1 The following uses shall be permitted within this option:
  - a. Single-family detached dwellings.
  - b. Single-family semi-detached dwellings (twins).
  - c. Single-family attached dwellings (townhouses) limited to a maximum of four (4) dwellings per structure.
  - Multi-family dwellings (apartments) limited to a maximum of four (4) dwellings per structure.
  - e. Other types of dwelling units may be considered and approved by the board of supervisors based on their appropriateness to the village or hamlet design.

- f. Commercial uses and mixed uses (commercial/residential) subject to the provisions of Section \_\_\_\_\_ and where the village tract abuts an arterial or collector road as designated in the comprehensive plan, as amended. Permitted non-residential uses in the Village Design Option shall include the following:
  - i. Retail uses, professional offices, and personal or professional services. Retail uses specifically excluded from the Village Option shall include flea markets, indoor/outdoor amusement businesses, automotive sales, car washes, gasoline stations, building supply stores, adult commercial, and ministorage facilities.
  - ii. Bed and breakfast establishments, subject to the provisions of Section \_\_\_\_.
  - iii. Day care centers, subject to the provisions of Section \_\_\_\_.
  - iv. Second-story residential uses above retail or office uses.
  - v. Artisan living/working uses.
- g. Uses permitted in the designated open space shall be as indicated in Section \_\_\_\_.

#### Section 3.0 Permitted Uses

- 3.3.2 The following uses shall also be permitted within this option:
  - a. Minor home occupations (by-right), subject to the provisions of Section \_\_\_\_.
  - b. Major home occupations (by special exception), subject to the provisions of Section \_\_\_\_.
  - c. Accessory uses shall be permitted subject to the provisions of Section \_\_\_\_\_ of this ordinance.

Note: Additional uses may be permitted in conjunction with a specific planning goal, such as historic resource preservation. (See "Preserve Historic Resources" in Chapter Three, page 83.) Open Space and Density/ Dwelling Unit Calculation

#### Open Space and Density/Dwelling Unit Calculation

The formulas for calculating the minimum required open space and maximum permitted number of dwelling units are included in this section of the ordinance. While there are several different methods possible for determining these numbers, a density multiplier is often used for determining the maximum number of units based on the net tract size. The tract size is typically adjusted based on the natural constraints present as well as easements, rights-of-way, and existing streets or utility easements. The multiplier times the tract size provides the maximum number of dwelling units permitted in the subdivision. The minimum percentage of open space required is also specified for each district and may be further increased depending on the level of the site constraints (steep slopes, floodplain, etc.) present.

# Section 4.0—Open Space and Density/Dwelling Unit Calculation Example 1

Determination of the maximum number of permitted dwelling units for the Conservation Design Option, the Open Space Design Option, and the Conventional Subdivision Option shall be based upon the adjusted tract acreage of the site and the calculations set forth below.

#### 4.1 Adjusted Constrained Lands

The sum of the constrained land shall be determined as indicated in Figure B-1. Where more than one type of constrained land overlaps, the constrained land with the higher percentage deduction shall apply. Figure B-1

Constraint		Percent of Constrained Area to be Deducted (multiplier)
1.	Land within rights-of-way of existing public streets, or within the rights-of-way for existing or proposed over- head utility lines.	100 percent (1.00)
2.	Land under existing private streets.	100 percent (1.00)
3.	Wetlands	95 percent (0.95)
4.	Floodway	100 percent (1.00)
5.	Floodplain	60 percent (0.60)
6.	Riparian buffer—Zone 1	100 percent (1.00)
7.	Prohibitively steep slopes (25%+)	80 percent (0.80)
8.	Precautionary slopes (15% to 25%)	30 percent (0.30)
9.	Extensive rock outcroppings (>1,000 s.f. in area)	90 percent (0.90)
Total		Adjusted Constrained Lands
Formula: Adjusted Constrained Lands = sum of 1 though 9		

#### Section 4.0 Open Space and Density/ Dwelling Unit Calculation

#### 4.2 Adjusted Tract Area

The Adjusted Tract Area (ATA) shall equal the Gross Tract Area (GTA) minus the Adjusted Constrained Lands as determined in subsection 4.1 above.

Formula: Adjusted Tract Area = Gross Tract Area – Adjusted Constrained Lands

#### 4.3 Permitted Dwelling Units

The maximum number of permitted dwelling units equals the Adjusted Tract Area multiplied by the density factors stated in Section \_\_\_\_\_ for each development option (i.e., RC-1=0.33, RR-1=0.55, R1-1=1.0, and R1-2=0.6). For development options RC-2 and RR-2, the maximum number of dwelling units equals the gross tract areas multiplied by the density factors stated in Section \_\_\_\_\_ for each development option (i.e., RC-2=0.10 and RR-2=0.20).

Formula: Maximum Dwelling Units = Adjusted Tract Area x Density Factor

#### 4.4 Minimum Open Space

The minimum open space required equals the percentage of the adjusted tract acreage depending on development option chosen (i.e., RC-1=70%, RR-1=60%, and R1-1=50%) plus the adjusted constrained lands.

Formula:

Open Space = Percent of Adjusted Tract Acreage + Adjusted Constrained Lands

Open space requirements of Section \_\_\_\_\_ of the Subdivision and Land Development Ordinance shall apply to the RC-2, RR-2, and R1-2 options.

# Sample calculation for the RR-1 Option Tract Conditions

100 acre gross tract;

16 acres of adjusted constrained lands. 84 acre adjusted tract area (100 acres gross tract area minus 16 acres of adjusted constrained lands).

#### **Open Space requirement**

- (required open space x adjusted tract area) + adjusted constrained lands
  - (60% open space x 84 acres)

+ 16 acres = 66.4 acres

#### Maximum number of units

= adjusted tract area x density multiplier (0.55) 84 acres x 0.55 = 46 dwelling units

#### Example 1 Sample Language Source

Adapted from North Coventry Township Zoning Ordinance (1996), Article XIV, Residential Design Options, conservation and open space design options adopted December 2002. This language is based on the Natural Lands Trust's Growing Greener model ordinance. Open Space and Density/ Dwelling Unit Calculation

#### Example 2 Sample Language Source

Adapted from *Kennett Township Zoning Ordinance* (1985, as amended), Article XV, Open Space Design Options, updated and re-adopted June 1999. Technical assistance for this portion of the ordinance was provided to the township by the Environmental Management Center of the Brandywine Conservancy, Chadds Ford, PA. (Only three of the five districts where the open space design option is permitted are included in this example.)

# Section 4.0—Open Space and Density/Dwelling Unit Calculation Example 2

#### 4.1 Restricted Open Space

- 4.1.1 The minimum restricted open space shall not be less than the percentage of the gross tract area stipulated for the applicable zoning district as follows:
  - DistrictMinimum Restricted<br/>Open SpaceR-1Sixty-five (65) percentFileFile
  - R-2 Fifty-five (55) percent R-3 Fifty (50) percent
- 4.1.2 Where a single contiguous tract of land falls into more than one zoning district, the minimum restricted open space requirement shall be met separately in each zoning district as stipulated above.

#### 4.2 Maximum Density of Development

- 4.2.1 Establishment of Net Tract Area For the purposes of establishing the maximum permissible number of lots or dwelling units on any tract where the Open Space Design Option is utilized, the Net Tract Area shall include all areas within the titled lines of a tract, excluding the following:
  - a. Any existing or proposed area that has been set aside as a permanent right-of-way or easement for a public or private street, or for above-ground or underground utilities other than for local service.
  - b. An area equivalent to fifty (50) percent of any area comprised of one or more of the following areas and excluding any area already excluded by subsection a, above.
    - i. Any area within the Flood Hazard District.
    - ii. Any area comprising wetlands under the jurisdiction of the U.S. Army Corps of Engineers and/or the Pennsylvania

Open Space and Density/ Dwelling Unit Calculation

Department of Environmental Protection; the township reserves the right to retain a qualified consultant to ascertain the extent of jurisdictional wetlands, reasonable and necessary charges therefor to be borne by the applicant.

- iii. Any area of steep slope exceeding twenty-five (25) percent, where the ratio of the change in elevation over the horizontal distance as measured between consecutive two (2) foot contour intervals exceeds 25/100.
- 4.2.2 Calculation of Maximum Density The maximum permissible number of lots or dwelling units on any tract utilizing the open space design option shall be calculated by multiplying the Net Tract Area in acres, as established above, by the multiplier stipulated below, rounding to the nearest whole number:

District	Density Multiplie
R-1	0.33
R-2	0.50
R-3	0.67

#### Sample calculation for the R-2 District Tract Conditions

100 acre gross tract; 84 acre net tract area (100 acres gross tract area minus 16 acres of constraints/exclusions in Section 2.1)

#### **Open Space Requirement**

= 55% of gross tract area 100 acres x 0.55 = 55 acres

#### **Maximum Number of Units**

= net tract area x density multiplier (0.50) 84 acres x 0.50 = 42 dwelling units

> Note: The density calculation section of a cluster ordinance can also include provisions for density bonuses (for example, for the provision of publicly accessible open space).

#### Dimensional Standards (Minimum Lot and Yard Areas)

The dimensional standards apply to the individual building lots within the cluster subdivision. Minimum lot sizes and building setbacks can be established for each type of dwelling unit. Another option is to specify minimum separation distances between proposed dwellings rather than requiring a minimum lot size. This approach provides the maximum flexibility for subdivision design layout, but may be more difficult to review and administer. Maximum impervious surface limitations can be specified here. This section might also include minimum setbacks around the perimeter of the cluster subdivision tract, however, the configuration of the open space is dealt with in the next section.

#### Sample Language Source

The sample language to the right uses the building separation approach rather than specifying minimum lot sizes and setbacks. The language is adapted from *North Coventry Township Zoning Ordinance* (1996), Article XIV, Residential Design Options, conservation and open space design options adopted December 2002.

## Section 5.0—Dimensional Standards (Minimum Lot and Yard Areas)

Under the Conservation Design and Open Space Design Options, lot boundaries shall be shown, but in lieu of a minimum lot area, the following lot and yard area regulations shall apply to any principal buildings or any other buildings whether the buildings are located on the same lot or on a separate lot:

- 5.1 Minimum separation distances between buildings, except as provided for accessory buildings in Section 5.3 below, shall be as follows:
  - 5.1.1 The minimum separation shall be fifty (50) feet measured perpendicularly from the rear wall of any residential building at any point to any other building not accessory to such residential building.
  - 5.1.2 Minimum separation distances from any other points between buildings shall be twenty (20) feet.

- 5.2 Principal or accessory buildings shall be located no less than eight (8) feet from any lot line, except where specifically approved through the conditional use process and, in no case, shall principal or accessory buildings be located less than three (3) feet from any lot line. Where a setback of less than eight (8) feet has been approved, an easement shall be provided between the lot line and a distance of no less than eight (8) feet from the approved building envelope.
- 5.3 Minimum separation at any point between accessory buildings (e.g., detached garages or sheds) and the principal buildings to which they are accessory shall not be less than twelve (12) feet; minimum separation distances between accessory buildings and any other building shall comply with Section 5.1 above.
- 5.4 Accessory buildings shall not be permitted on residential lots of less than ten-thousand (10,000) square feet in gross area, except where specifically approved through the conditional use process.

- 5.5 No exterior windows (except for clerestory windows), doors, or other openings shall be permitted in any portion of principal or accessory buildings located less than five (5) feet from any lot line.
- 5.6 Where greater setbacks do not otherwise apply, front-facing garages, whether attached or detached, shall be set back a minimum of thirty-five (35) feet from the edge of the right-of-way or from the sidewalk, whichever results in the greatest setback. In addition, front-facing garages shall be set back a minimum of eight (8) feet from the front façade of the dwelling unit. If the front façade is not uniform, the eight (8) foot setback shall be measured from the point of the façade nearest the street.
- 5.7 Minimum setback from the edge of the cartway (or outside edge of the curb if applicable) of any new local road which is part of the proposed subdivision/land development shall not be less than twenty-five (25) feet, except as provided for in Section 5.6 above. Where abutting a new arterial or collector road within the proposed subdivision/land development, the setbacks shall be as follows: arterial road: seventy-five (75) feet; collector road: sixty-five (65) feet.

- 5.8 In addition to the individual building lot setback requirements, new structures shall meet the following guidelines for minimum setbacks whether the adjacent use is on or off the site. These setbacks may be modified subject to approval by conditional use:
  - 5.8.1 From external road rights-of-way: 75 feet
  - 5.8.2 From other tract boundaries: 50 feet
  - 5.8.3 From crop or pasture land: 100 feet
  - 5.8.4 From buildings or barnyards housing livestock:250 feet
  - 5.8.5 From active recreation areas such as courts or playing fields: 150 feet
- 5.9 For each lot created under this development option, the applicant shall indicate a building envelope which complies with the dimensional standards above and with the minimum buildable area requirements of Section 902, Natural Resource Conservation Overlay District.

Note: Provisions for maximum impervious surface should also be included in the ordinance standards. A sliding scale or formula is recommended because of the many variations in lot sizes possible.

# Open Space Uses and Design Standards

This section lists the permitted uses within the open space and guidelines for how the open space should be configured. Uses not permitted in the open space may also be included in this section.

# Section 6.0—Open Space Uses and Design Standards

See "Open Space — Maintain Existing Character." Chapter Three, page 71 for sample ordinance language. Additional discussion of this topic is in "Protect Scenic Views," page 74

in Chapter Three.

## Section 7.0—Open Space Ownership

Subject to permanent conservation restrictions, designated open space land in any subdivision may be owned by a homeowners' association, the township, a land trust, another conservation organization recognized by the township, or by a similar entity approved by the township, or may remain in private ownership.

#### 7.1 Fee Simple Dedication to the Township

The township may, but shall not be required to, accept dedication in the form of fee simple ownership of designated open space land. Where the township accepts dedication of designated open space land that contains improvements, the board of supervisors may require the posting of financial security to ensure structural integrity of said improvements as well as the functioning of said improvements for a term not to exceed eighteen (18) months from the date of acceptance of dedication. The amount of financial security shall not exceed the actual cost of installation of said improvements plus fifteen (15) percent.

#### 7.2 Homeowners' Association

The designated open space land and associated facilities may be held in common ownership by a homeowners' association. The association shall be formed and operated under the following provisions:

- 7.2.1 The developer shall provide the township with a description of the association, proof of incorporation of the association, a copy of its bylaws, and satisfactory proof of adoption thereof, a copy of the declaration of covenants, easements or restrictions or similar document(s) regulating the use of the property and setting forth methods for maintaining the open space.
- 7.2.2 The association shall be organized by the developer and operated with financial subsidization from the developer before the sale of any lots within the development.
- 7.2.3 Membership in the association shall be mandatory for all purchasers of homes therein and their successors. The conditions and timing of transferring control of the association from developer to the homeowners shall be identified.

#### **Open Space Ownership**

This section specifies the various ownership options for the preserved open space. Typically, these options include: fee simple dedication to the municipality or a private conservation organization, dedication of an easement to the municipality or a private conservation organization, or ownership by a homeowner's association. In some cases, such as when the open space is a preserved farm, the open space may stay in private ownership with a permanent restriction against future development.

#### Sample Language Source

Adapted from North Coventry Township Zoning Ordinance (1996), Article XIV, Residential Design Options, conservation and open space design options adopted December 2002. This language is based on the Natural Lands Trust's Growing Greener model ordinance.

- 7.2.4 The association shall be responsible for maintenance and insurance on open space owned by the association, enforceable by liens placed by the homeowners' association. Maintenance obligations also may be enforced by the township, which may place liens to recover its costs. Any governmental body with jurisdiction in the area where the development is located may place liens on the owners of the open space to collect unpaid taxes.
- 7.2.5 The members of the association shall share equitably the costs of maintaining open space owned by the association. Shares shall be defined within the association bylaws or declaration. Association dues shall be structured to provide for both annual operating costs and to cover projected long-range costs relating to the repair of any capital facilities (which shall be deposited in a sinking fund reserved for just such purposes).
- 7.2.6 In the event of a proposed transfer, within the methods here permitted, of open space by the homeowners' association, or of the assumption of maintenance of such land by the township, notice of such action shall be given to all members of the association.
- 7.2.7 The association shall have or hire adequate staff to administer common facilities and to properly and continually maintain the open space.

- 7.2.8 The homeowners' association may lease open space lands to any other qualified person, or corporation, for operation and maintenance of such lands, but such a lease agreement shall provide:
  - a. That the residents of the development shall at all times have access to the open space lands contained therein (except that access to land that is actively farmed shall be limited to times of the year when the fields are fallow);
  - b. That the open space lands to be leased shall be maintained for the purposes set forth in this ordinance; and
  - c. That the operation of open space facilities may be for the benefit of the residents only, or may be open to the residents of the township, at the election of the developer and/or homeowners' association, as the case may be.
- 7.2.9 The lease referred to in section 7.2.8 above shall be subject to the approval of the board of supervisors and any transfer or assignment of the lease shall be further subject to the approval of the board. Lease agreements so entered upon shall be recorded with the Recorder of Deeds of Chester County within thirty (30) days of their execution and a copy of the recorded lease shall be filed with the secretary of the township.
- 7.2.10 Homeowners' association documentation approved by the township demonstrating compliance with the provisions herein shall be recorded with the final subdivision and land development plans, and proof of recording thereof shall be provided to the township prior to the issuance of any building permits for the property. At the time of preliminary plan submission, the applicant shall provide draft homeowners' association documentation with sufficient detail to demonstrate feasible compliance with this section.

#### 7.3 Condominium Ownership

The designated open space land and associated facilities may be held in common by the unit owners as a condominium, the documents for which shall be approved by the board of supervisors. Such condominium documents shall be in conformance with the Pennsylvania Uniform Condominium Act of 1980, as amended. All common open space land shall be "common elements" or "limited common elements." To the degree applicable, condominium documents shall comply with the provisions of section 7.2 above. Condominium documents shall be recorded with the final subdivision and land development plans. At the time of preliminary plan submission, the applicant shall provide draft condominium documents with sufficient detail to demonstrate feasible compliance with this section.

#### 7.4 Dedication of Easements to the Township

The township may, but shall not be required to, accept easements for public use of any portion or portions of designated open space land. In such cases, title to the land which remains in common ownership by condominium unit owners, homeowners' association, or private conservation organization are held by the township.

#### 7.5 Private Conservation Organization or the County

With the permission of the township, an owner may transfer either fee-simple title of the open space or easements on the open space to a private, nonprofit organization recognized by the township, among whose purposes it is to conserve open space and/or natural resources, or the County, provided that:

- 7.5.1 The organization is acceptable to board of supervisors, and is a bona fide conservation organization with perpetual existence;
- 7.5.2 The conveyance contains appropriate provision for proper reverter or retransfer in the event that the organization becomes unwilling or unable to continue carrying out its functions;
- 7.5.3 The open space is permanently restricted from future development through a conservation easement and the township is given the ability to enforce these restrictions; and
- 7.5.4 A maintenance agreement acceptable to the board of supervisors is entered into by the developer and the organization.

#### 7.6 Non-Common Private Ownership of Designated Open Space

- 7.6.1 Designated open space may be retained in ownership by the applicant or may be transferred to other private parties subject to compliance with all standards and criteria for designated open space herein. Such open space shall be permanently restricted from future development through a conservation easement and the township shall have the ability to enforce these restrictions.
- 7.6.2 All or portions of the designated open space may be included within an individual lot where deemed appropriate by the board of supervisors (for example, in the case of a working farm). The board of supervisors may require that responsibility for maintenance of the privately owned designated open space be conferred upon the owner(s) of said open space.

#### Section 8.0—Open Space Maintenance Standards

Unless otherwise agreed to by the board of supervisors, the cost and responsibility of maintaining common facilities and open space shall be borne by the property owner, condominium association, homeowners' association, or conservation organization as outlined below.

#### 8.1 Required Open Space Management Plan

The applicant shall provide a plan for the long term management of the designated open space which is to be created as part of the development, including maintenance and management of any wastewater disposal, water supply, stormwater management or any other common facilities which may be located within areas of designated open space.

- 8.1.1 Open Space Management Plan Information Such a plan shall include a narrative discussion of the following items:
  - a. The manner in which the designated open space and any facilities included therein will be owned and by whom it will be managed and maintained;

- b. The conservation, land management and agricultural techniques and practices which will be used to conserve and perpetually protect the designated open space, including conservation plan(s) approved by the Chester County Conservation District where applicable;
- c. The professional and personnel resources that will be necessary in order to maintain and manage the property;
- d. The nature of public or private access that is planned for the designated open space; and
- e. The source of money that will be available for such management, preservation and maintenance on a perpetual basis.
- 8.1.2 At the time of preliminary plan submission, the applicant shall provide a draft open space management plan with sufficient detail to demonstrate feasible compliance with the provisions required under this section.

#### Open Space Maintenance Standards

This section requires that the applicant provide an open space management plan. The plan should specify how the open space will be maintained and the personnel and financial resources necessary to properly maintain it. The plan should be recorded with final subdivision plans at the office of the County Recorder of Deeds.

#### Sample Language Source

Adapted from North Coventry Township Zoning Ordinance (1996), Article XIV, Residential Design Options, conservation and open space design options adopted December 2002.

- 8.1.3 The management plan shall be recorded with the final subdivision and land development plans, in the office of the Recorder of Deeds of Chester County.
- 8.1.4 The board may require as a condition of subdivision and/or land development approval that appropriate management contracts be established as evidence of the ability to adhere to the provisions of the approved management plan.
- 8.1.5 In order to allow for the changing needs inherent in the perpetual management of land, the management plan shall contain a provision to the effect that it may be changed by written application to the board of supervisors. Approval of such application by the board shall not be unreasonably withheld or delayed, so long as:
  - a. The proposed change is feasible, is consistent with the purposes of preservation of open space set forth in this section and with the approved subdivision and land development plans; and
  - b. The plan for such change avoids a likelihood of the obligation for management and maintenance of the land falling upon the township without the consent of the board of supervisors.

#### 8.2 Provisions for Maintenance of Designated Open Space

- 8.2.1 In the event that a homeowners' association, condominium, any successor organization, or any owner of the open space shall, at any time after establishment of a development containing open space land, fail to maintain such land in reasonable order and condition in accordance with the development plan, the open space management plan and/or association or condominium documents as applicable, the township may serve written notice upon the owner of record, setting forth the manner in which the owner of record has failed to maintain the open space land in reasonable order and condition.
- 8.2.2 Failure on the part of a homeowners' or condominium association to adequately maintain the open space land in reasonable order and condition shall constitute a violation of this ordinance. The township is hereby authorized to give notice, by personal service or by United States mail, to the owner or occupant, as the case may be, of any violation, directing the owner to remedy the same within twenty (20) days.

Appendix B: Elements of a Cluster Ordinance 177

- 8.2.3 Upon default by any owner, homeowners' association, conservation organization, or other entity responsible for maintenance of designated open space and/or associated facilities, where such maintenance is required under the terms of the open space management plan, homeowners' association or condominium documents, any subdivision and/or land development plan for the property, the zoning approval for the property, or under any applicable requirements of any township ordinances, permits or approvals, or where such maintenance is otherwise necessary to abate a nuisance, emergency, hazard or other condition threatening persons or property or the public health, safety or welfare, the township may, but shall not be obligated, to take the following actions:
  - a. Upon thirty (30) days advance written notice to the person, association or entity responsible for such maintenance (or any such lesser period as may be specified in the notice in instances of emergency) and the failure of the responsible individual, entity or association within such thirty (30) day period (or such lesser period in the event of an emergency) to perform the necessary maintenance and otherwise remedy the condition set forth in the township's notice, to enter upon the open space, accessing the same

through any other lands of such entity, association or individual as may be necessary, to perform such maintenance and take any other action necessary to correct the condition provided in the township's notice.

b. Any and all costs incurred by the township in connection with such notice and maintenance shall be paid by the responsible individual, entity or association within ten (10) days after written demand by the township. Upon failure of the responsible entity, association or individual to pay such costs by the time required, there shall be added thereto interest at the rate of fifteen (15) percent per annum as well as all costs incurred by the township in collection thereof.

### Appendix C How Do I Get There? The Cluster Tour



This tour provides directions to the successful cluster subdivisions identified throughout the County. The tour is divided into the areas surrounding the boroughs of Phoenixville, Malvern, West Chester, Downingtown, Coatesville, Kennett Square, and West Grove, and the village of Bucktown. The directions to the cluster subdivisions begin at intersections of the nearest major roads or highways. Road names in bold text represent roads that will be traveled on.

Important Note: Please be aware that the areas you will be visiting on the Cluster Tour are private developments. As such, please restrict vehicles to passenger size, refrain from taking numerous photographs, and **stay in the public right-of-way and off of private property at all times**. Please drive slowly and yield to pedestrians. We recommend visits to developments be made during the week in order to reduce the impact on residents of the development. The future of the tour depends on the courteous response of the participants.



#### I: Ridgelea

Ridgelea is located just south of the intersection of Routes 100 and 23 in South Coventry Township in Bucktown. The following directions begin at the intersection of Routes 23 and 100 in Bucktown:

• Proceed south on Route 100 and turn left on Hartman Road into Ridgelea.

ADC Street Map: Chester County, PA, 14th Edition, 2001 Alexandria Drafting Company. Map 6



#### 2: Kimberton Greene

Kimberton Greene is located in East Pikeland Township just south of Seven Stars Road about one mile from the borough of Phoenixville. The following directions begin at the intersection of Routes 113 and 23 in Phoenixville:

- Proceed south on **Route 113** towards Downingtown for approximately two miles.
- After passing the Kimberton Fairgrounds, turn left onto **Coldstream Road**.
- After passing Norman Lane on the right, turn right onto **Beacon Drive East** or **West** into Kimberton Greene.

ADC map 14



#### **3: Pickering Glen**

Pickering Glen is located in Schuylkill Township on the southwestern corner of the intersection of Pot House Road and Route 29. The following directions begin at the intersection of Routes 23 and 29 in Phoenixville:

- Proceed south on **Route 29** towards Malvern for approximately <sup>3</sup>/<sub>4</sub> of a mile.
- After passing Campbell Lane on the right, turn right on **Pot House Road**.
- Turn left on **Trotters Drive** into Pickering Glen.



#### 4: Charlestown Hunt

Charlestown Hunt is located in Charlestown Township adjacent to Route 29 (State Road) south of Buckwalter Road, less than one and one half miles from the Borough of Phoenixville. The following directions begin at the intersection of Routes 23 and 29 in Phoenixville Borough:

- Proceed south on **Route 29** towards Malvern for a little less than 2 miles.
- After passing Buckwalter Road on the right, turn right onto **Charlestown Hunt Drive** into Charlestown Hunt.

ADC maps 14 & 15



#### 5: Waynesborough Woods

Waynesborough Woods is located off of Route 252 just to the south of Leopard Road in Easttown Township. The following directions begin at the intersection of Routes 30 and 252 in Paoli:

- Proceed south on **Route 252** towards Route 3 for approximately 2<sup>1</sup>/<sub>2</sub> miles.
- After passing Leopard Road on the left, turn left on **Stoney Point Drive** into Waynesborough Woods.

ADC map 24

#### Malvern Area



#### 6: Deerfield Knoll

Deerfield Knoll is located just to the north of Route 3 off of Dutton Mill Road in Willistown Township. The following directions begin at the intersection of Routes 352 and 3 in Willistown Township:

- Proceed west on **Route 3** towards Newtown Square for approximately 1 mile.
- After passing Stoneham Drive on the right, turn left on **Dutton Mill Road**.
- Almost immediately, turn right on **Hedgerow Lane** into Deerfield Knoll.



#### 7: Marsh Harbour

Marsh Harbour is located in Upper Uwchlan Township off of Park Road on the eastern side of Marsh Creek State Park. The following directions begin at the interchange of Route 100 and the Pennsylvania Turnpike.

- Proceed north on **Route 100** into the village of Eagle.
- At the traffic light (near Eagle Tavern) bear left onto **Conestoga Road**.
- Once on Conestoga Road, turn left onto **Park Road**.
- Continue on Park Rd for  $1\frac{1}{2}$  miles
- Turn left onto Marsh Creek Drive into Marsh Harbour.

ADC map 20



#### 8: Pinebrooke

Pinebrooke is located off of Route 322 in East Brandywine Township, about one mile north of Guthriesville. The following directions begin at the interchange of the Exton Bypass and Route 322.

- Proceed west on **Route 322** for approximately 3<sup>1</sup>/<sub>2</sub> miles.
- After passing Bollingers Road on the left, turn right onto **Pinebrooke Circle**.

ADC map 19



#### 9: Uwchlan Woods at Williamsburg

Uwchlan Woods is located along the East Caln/Uwchlan Township line. The following directions begin at the interchange of the Exton Bypass and Route 113.

- Proceed north on **Route 113** for approximately 1 mile.
- Turn left onto Garris Road and follow to the T intersection.
- Turn left onto Norwood Road and follow for approximately ½ mile.
- After passing Chippenham Road on the right, turn right onto Williamsburg Boulevard into the community of Williamsburg.
- Make the first left onto Livingston Drive into the Uwchlan Woods section of the development.



#### 10: The Woodlands

The Woodlands is located in West Whiteland Township along Boot Road. The following directions begin at the intersection of Routes 30 and 100.

- Proceed south on **Route 100** to the Pottstown Pike exit (formerly Route 100 exit).
- Once on **Pottstown Pike**, Boot Road is the next traffic light.
- Turn right onto Boot Road.
- Proceed ¼ mile and make first right onto Conifer Drive into The Woodlands.

ADC map 31



#### 11: Parke Farm

Parke Farm is located in East Bradford Township along Route 162. The following directions begin at the intersection of Route 162 and Business Route 322.

- Proceed west on **Route 162** east for approximately 2 miles.
- After passing South Creek Road on the left, Make a right onto North Creek Road.
- Make quick right onto **Copes Lane** into Parke Farm.

ADC map 31

#### West Chester Area



#### 12: Sagamore

Sagamore is located in East Bradford Township off of Route 52. The following directions begin at the intersection of Rosedale Avenue and Route 52.

- Proceed south on **Route 52** for approximately <sup>1</sup>/<sub>2</sub> mile.
- Turn right onto Lake George Circle into Sagamore.



#### 13: The Jefferson at Westtown

The Jefferson at Westtown is located in Westtown Township across Route 202 from Stetson Middle School. The following directions begin at the intersection of Routes 926 and Route 202 (West Chester Bypass).

- Proceed north on **Route 202** for approximately <sup>3</sup>/<sub>4</sub> of a mile.
- Turn right onto **Skiles Boulevard** into The Jefferson at Westtown

ADC map 41



#### 14: The Greens at Penn Oaks

The Greens at Penn Oaks is located just off of Route 202 in Thornbury Township. The following directions begin at the intersection of Routes 202 and 926.

- Proceed south on **Route 202** for approximately 1 mile.
- Turn left onto Penn Oaks Drive.
- Continue straight into The Greens at Penn Oaks.

ADC map 41

West Chester Area



#### 15: Brandywine at Thornbury

Brandywine at Thornbury is located just southwest of the intersection of Routes 202 and 926 in Thornbury Township. The following directions begin at the intersection of Route 202 and Route 926.

- Proceed west on **Route 926** for approximately <sup>1</sup>/<sub>2</sub> mile.
- Turn left onto **Bridlewood Boulevard** into Brandywine at Thornbury.



#### **16: Brandywine River Estates**

Brandywine River Estates is located in East Bradford Township between Route 52 and Route 842. The following directions begin at the intersection of Routes 52 and Creek Road.

- Proceed north on **Route 52** for approximately <sup>1</sup>/<sub>4</sub> mile.
- Just after the Brandywine Picnic Park and Delaney Soccer Park, make a left onto
   Brandywine Creek Road and follow for approximately 1 mile.
- Turn right onto **Withers Way** into Brandywine River Estates.

ADC map 40



#### 17: Birmingham Hunt

Birmingham Hunt is located between New Street and Route 202 in Birmingham Township. The following directions begin at the intersection of Routes 926 and 202.

- Proceed west on **Route 926** for approximately 1 mile.
- Make a left on **South New Street** at the traffic light.
- Follow South New Street for approximately 1 mile.
- Make a left onto **Revere Drive** into Birmingham Hunt.

ADC map 41

## Neet Chester Area

#### 18: Reserves at Chaddsford

Reserves at Chaddsford is located in Birmingham Township north of Route 1. The following directions begin at the intersection of Route 1 and Creek Road just over the Chester County line in Delaware County.

- Proceed north on **Creek Road** for approximately <sup>1</sup>/<sub>2</sub> mile.
- After passing Upper Bank Drive, turn right onto **Masters Way** into Reserves at Chaddsford.



#### 19: Oakdale

Due to the small scale and lack of turnaround, this development is not included on the tour. Please refer to the aerial and description in Chapter Two for more information.



#### 20: Country Club Valley

Country Club Valley is located in Valley Township, northeast of the city of Coatesville. The following directions begin at the intersection of Business Route 30 and Route 82 in Coatesville.

- Proceed west on **Business Route 30** and follow for approximately 1<sup>1</sup>/<sub>4</sub> miles.
- Turn right onto **Country Club Road** and follow for approximately <sup>1</sup>/<sub>2</sub> mile.
- After passing Leona Drive on the right, turn right onto **Pine Valley Drive** into Country Club Valley.

ADC map 28

#### Kennett Square Area



#### 21: Tullamore

Tullamore is located in Pocopson Township off of Route 926, about one mile west of the Brandywine Creek. The following directions begin at the intersection of Route 52 and Route 926, just north of Longwood Gardens.

- Proceed east on **Route 926** for approximately 1<sup>1</sup>/<sub>2</sub> miles.
- Turn left onto Denton Hollow Road.
- Proceed straight onto **Tullamore Drive** into Tullamore.



#### 22: Coniston

Coniston is located north of Route 52 just to the west of the intersection of Locust Grove Road and Haines Mill Road in Pocopson Township. The development is approximately ½ mile south of the Pocopson Home. The following directions begin at the intersection of Routes 52 and 926, just north of Longwood Gardens.

- Proceed north on **Route 52** for approximately <sup>1</sup>/<sub>2</sub> mile.
- After passing Valley Road on the left, turn left on Locust Grove Road.
- After making a left onto Locust Grove Road, make the first left onto Haines Mill Road.
- Make next left onto **Coniston Drive** into Coniston.



#### 23: Southridge

Southridge is located in Kennett Township, approximately 3 miles south of Kennett Square off of Route 82. The following directions begin in the borough of Kennett Square on Route 82 (Union Street).

- Proceed south on Route 82.
- Remain on Route 82 as it turns left (next to the Kennett High School) and changes from Union Street to South Street.
- Follow Route 82 for approximately 3 miles.
- Turn right onto Marshall Bridge Road.
- Make next right onto **Southridge Drive** into Southridge.

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# Kennett Square Area

#### 24: Ponds at Woodward

Ponds at Woodward is located in Kennett Township about one mile south of the intersection of Route 1 and Route 52. The following directions begin at the intersection of Routes 1 and 52.

- Proceed south on **Route 52** for approximately 1 mile.
- After passing Hillendale Road, make the next right onto **Pond View Drive** into Ponds at Woodward.



#### 25: Villages at Penn Ridge

Villages at Penn Ridge is located about one half mile east of the intersection of Route 796 and Old Baltimore Pike in Penn Township. The following directions begin in Jennersville at the intersection of Route 796 and Old Baltimore Pike.

- Proceed east on **Old Baltimore Pike** for approximately 1 mile.
- Turn right onto **Penn Ridge Way** into Villages at Penn Ridge.

## Appendix D Preferred Design Elements

		Ridgelea	Kimberton Greene	Pickering Glen	Charlestown Hunt	Waynesborough Woods	Deerfield Knoll	Marsh Harbour	Pinebrooke Village	Uwchlan Woods at Williamsburg	The Woodlands	Parke Farm	Sagamore	The Jefferson at Westtown	The Greens at Penn Oaks	Brandywine at Thornbury	Brandywine River Estates	Birmingham Hunt	Reserves at Chaddsford	Oakdale	Country Club Valley	Tullamore	Coniston	Southridge	Ponds at Woodward	Villages at Penn Ridge
844-	Open Space	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
	Maintain Existing Character		1	$\checkmark$	1	$\checkmark$	1		1	$\checkmark$		$\checkmark$				$\checkmark$	1	$\checkmark$	1	$\checkmark$	$\checkmark$	$\checkmark$	1	$\checkmark$	$\checkmark$	
	Protect Scenic Views		1		1	✓	1			$\checkmark$		<b>√</b>			1		1		1	$\checkmark$	1	$\checkmark$	1	$\checkmark$	1	
	Preserve Existing Views				/										/		1		/							<u> </u>
	Preserve Historic Resources	✓		✓				✓																	<u> </u>	
W.	Natural Features																									
	Preserve Natural Resources	$\checkmark$	✓	$\checkmark$	1	$\checkmark$	✓	$\checkmark$	✓	$\checkmark$	1	$\checkmark$		$\checkmark$		$\checkmark$	1	$\checkmark$	1	$\checkmark$	<b>√</b>	$\checkmark$	1	$\checkmark$	1	$\checkmark$
	Screening					✓	1		1	$\checkmark$		$\checkmark$	1	$\checkmark$	1		1		1	$\checkmark$	1	$\checkmark$	1	$\checkmark$	1	$\checkmark$
	Stormwater Management Facilities				1		1					$\checkmark$		$\checkmark$					1		1					
	Street Trees						1				1		/		/											<u> </u>
	Alternative Ground Covers				/			✓ ✓									/					<b>√</b>				
	Cul-de-sac lurnarounds	✓	<ul> <li>Image: A start of the start of</li></ul>	_		✓		✓		✓	~				<b>√</b>	✓						✓		✓		
<u></u>	Vehicular Facilities																									
	Street Width	$\checkmark$					✓	$\checkmark$		$\checkmark$		$\checkmark$	✓		✓	$\checkmark$	✓	$\checkmark$	✓	$\checkmark$	<ul> <li>Image: A start of the start of</li></ul>		$\checkmark$			$\checkmark$
	Boulevards		1	$\checkmark$		$\checkmark$	1	$\checkmark$			1		1				1			$\checkmark$		$\checkmark$		$\checkmark$		$\checkmark$
	Street Lighting	1				✓	1		1		1				1											$\checkmark$
	Alternative Parking Design					$\checkmark$	1			$\checkmark$		$\checkmark$			1			$\checkmark$	1	$\checkmark$	1	$\checkmark$		$\checkmark$		$\checkmark$
×	Pedestrian Facilities																									
	Trails		✓	$\checkmark$	1								1			$\checkmark$	1	$\checkmark$								
	Sidewalks	1		1	1			1	1	1	1		1	$\checkmark$	1	1										$\checkmark$

## Appendix E General Sources of Information

ADC Street Map: Chester County, PA, 14th Edition, 2001 Alexandria Drafting Company.

"Conservation Subdivision Design," Tool #30, Community Planning Handbook, Volume II, Chester County Planning Commission (CCPC), 1999.

"Economic Feasibility of Cluster Development," Tool #13, Community Planning Handbook, Volume II, CCPC, 1999.

Growing Greener: A Conservation Planning Workbook for Municipal Officials in Pennsylvania, prepared for the Pennsylvania Department of Conservation and Natural Resources by the Natural Lands Trust, Media, PA, September 2001.

LANDSCAPES: Managing Change in Chester County 1996–2020, Comprehensive Plan Policy Element, CCPC, 1996, amended 2000 and 2003.

Linking Landscapes: A Plan for the Protected Open Space Network in Chester County, PA, CCPC, 2002.

"Open Space/Cluster Development," Tool #4, Community Planning Handbook, Volume I, CCPC, 1997.

Rural Community Design Guide, CCPC, 1995.

Suburban Community Design Guide, CCPC, 1996.

"Traditional Neighborhood Development," Tool #9, Community Planning Handbook, Volume I, CCPC, 1997.

Watersheds: An Integrated Water Resources Plan for Chester County, Pennsylvania and Its Watersheds, Chester County Water Resources Authority, September 2002.

#### **Chester County Planning Commission**

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