

CAROLINA HOMES INC.

JOHNSTONE PARK
NEIGHBOURHOOD AREA STRUCTURE PLAN

APRIL 2007 REVISION

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1.0 INTRODUCTION

The accompanying documentation has been provided in support of amending the current Neighbourhood Area Structure Plan (NASP) for the 59.658ha (147.420ac) Johnstone Park area within The City of Red Deer. It should be noted that since this documents' initial submission in 1999, approximately 47.022ha has been developed. The Plan, as presented in this submission, reflects the intentions of both The City of Red Deer Land Use By-law and the revised Northwest Area Structure Plan, comments of City Planning staff, as well as local market conditions.

The plan identifies current and proposed land uses, including area for open spaces and public, social and recreational facilities.

The plan also addresses the servicing concepts for water, sanitary sewers, storm sewers and road infrastructure.

1.1 FORMAT The report is divided into the following sections:

- 1.0 Introduction
- 2.0 Context
- 3.0 Applicable Plans and Policies
- 4.0 Neighbourhood Area Structure Plan
- 5.0 Servicing

2.0 CONTEXT

2.1 LOCAL SETTING

The 59.658ha (147.420ac) subject site is located in the northwest corner of the City of Red Deer, within the Northwest Area Structure Plan boundary. Legally, the property is located in portions of the SE. 1/4 Sec 31-38-27- W4 and the NE1/4 Sec 30-38-27-W4. It is bounded to the north and west by Johnstone Drive, an arterial road; to the south by an existing industrial development; and to the east by Taylor Drive, a four lane divided major road (see Figure 1).

The lands east of Taylor Drive contain primarily low density residential development, and an industrial oil well servicing company is located to the west of the site on 76 Street. An industrial park is located south of the site, as well as to the west of Johnstone Drive, which is currently known as the Edgar Industrial Park. The area north of Johnstone Drive has been developed as residential housing.

2.2 LAND OWNERSHIP

The remaining undeveloped portions of the site are currently owned by one landowner, namely Carolina Homes Inc. These areas are comprised of Lot 3, Lot 4, Lot 5 Plan 962 4094, the former 76th Street right of way, Plan 4067J, and a remaining 0.299 ha. from previous subdivisions. See Appendix B for the applicable certificates of title.

2.3 SITE DESCRIPTION

Initially, the site was primarily used for agricultural purposes, with the majority of the lands being cultivated. Various stands of trees were interspersed throughout the site, as indicated on Figure 2. The site has since been cleared of much of the original tree stands, with the exception of what was preserved in the Central Park and in the Municipal Reserve off of Jarvis Avenue.

2.3.1. *Environmental Issues*

A portion of the site at the northwest corner of Taylor Drive and the central collector road intersection, now named Jewell Street, was contaminated from a former oilfield tanker cleaning operation. This portion of the land has been the subject of a Class 1 Environmental Assessment prepared by UMA Engineering Ltd. The environmental assessment found that the contaminated site could not be developed for residential use without remedial action. The location of the contamination is illustrated in Figure 3. The implications, and remedial procedures, of the contaminated site will be discussed further in the body of this report (see Section 4.3).

2.3.2. *Topography*

The property is characterized by a gentle sloping direction from a high point in the north area of the site. The south east portion of the site has the lowest elevations. The maximum grade change is approximately 3.0 metres.

3.0 APPLICABLE PLANS AND POLICIES

3.1 STATUTORY PLANS

There are two major statutory plans which directly affect the subject site, namely; The City of Red Deer Land Use Bylaw 3156/96, and the new northwest Area Structure Plan (ASP) adopted by Council in July 1998, and amended in September 2005.

The City of Red Deer Land Use Bylaw sets out the Land Use designation for the site and the rules for the designated Land Use districts. The Northwest ASP sets out the general planning framework for the site and surrounding areas. It details the physical description, utility services, transportation plans and Land Use options for the subject property.

Provisions in the Northwest Area Structure Plan (Northwest ASP) which are relevant to the Johnstone Park site, are listed as follows:

“4.2 Residential

Residential development in the plan area will be located east of the railway line. Any residential development must be preceded by a Neighbourhood Area Structure Plan in accordance with the City's Planning and Subdivision Guidelines. These guidelines require that residential development should be diversified providing a range of housing types and densities to suit the needs of the community. Specific land uses are determined at the Neighbourhood Area Structure Plan stage. The overall density cannot exceed 45 persons per gross hectare.”

“4.3 Industrial

There are two areas where industrial growth will occur. The first area is at the south end of Johnstone Park where there will be a small extension of the Golden West Industrial area. This extension will allow the roads to be looped; the roads currently dead-end at the quarter section line.”

“6. Implementation

The objective of the Northwest Area Structure Plan shall be implemented through the Neighbourhood Area Structure Plans which are developed for the area. Neighbourhood Area Structure Plans are mandatory prior to any residential development within the plan area, consideration should be given to requiring an area structure plan prior to any industrial development. Any Neighbourhood Area Structure Plan shall be consistent with the Northwest Area Structure Plan.”

Also note paragraph 4.5, of the Northwest ASP, “Schools”, which provides for a public elementary school to be built in the Johnstone Park neighbourhood. This proposed school site has since been removed and the area converted to park.

The initially submitted Plan, and this amendment, responds to each of the above mentioned provisions in that a range of residential housing types are provided with the proposed density being 44.9 persons per hectare. Additionally 9.410ha (23.252ac) of industrial development, including the road, will be provided as in paragraph 4.3 and Map 4 of the Northwest ASP.

3.2 OTHER POLICIES:
SOCIAL CARE SITES

In 1998, the Red Deer Community Services Master Plan was amended for new residential developments to include one 0.12 ha (0.30ac) site for a social care/daycare site.

The Planning and Subdivision Guidelines indicate that a Neighborhood Area Structure Plan for a neighbourhood is required to provide the following:

- one site of 0.12ha (0.30 ac) for the possible development of a private or public day care or social care facility (The Plan, as presented with this submission, contains one such site, located towards the southern portion of the northern sites central collector road);
- one 0.81ha (2.00ac) site suitable for church development (The Plan, as presented with the initial submission, contained one such development located towards the southwest portion of the site towards the Johnstone Drive/central collector road intersection. The church site was advertised and no interested parties came forward. The church site has been redeveloped in the form of an R3 development. See Appendix A for a copy of the advertisement.)

3.3 OTHER POLICIES: MUNICIPAL RESERVE

The Municipal Government Act stipulates that 10% of a residential development site shall be dedicated for Municipal Reserve.

Up to 1.0 ha of land used for a dry pond may be designated Municipal Reserve, provided that the area can be used for park purposes.

4.0 NEIGHBOURHOOD AREA STRUCTURE PLAN

This section of the report will describe the Plan and address the issues set out in section 3.1.1 of the Planning and Subdivision Guidelines.

4.1 LAND USE

Currently, the southern-most 9.410ha (23.252ac), including 1.464 ha of road, of the subject site is designated I-1, Business Service Industrial, the developed portions of the site north of the industrial parcel are designated with various residential and park land uses (detailed further in this document), and the remaining undeveloped portion is presently designated A-1, Future Urban Development.

The Plan, as presented with this submission, proposes to develop the remaining portions of the site as single family detached residential (R1), single family semi-detached (R1A), multi-family residential (R2) and public utility areas.

These proposed Land Uses are summarized in the following section and illustrated on Figure 4.

4.1.1. Residential

The plan currently shows a mix of residential housing districts in the form of R-1, RIN, R-2, and R-3 designations. It also proposes to develop the remainder as R1, R1-A, and R2 designations.

▪ **R1 Residential (Low Density) District**

A portion of the northern area of the site takes the form of the R-1 (Low Density) District. Development in this district will be in the form of detached single family dwellings. Rear servicing will be provided for all lots.

In total, the site currently contains 98 R-1 Residential (Low Density) lots, and approximately 87 proposed lots, with a minimum frontage of 12.0m/lot (the total of 185 lots is within the maximum 262 lots allowable based upon 12.0m/lot minimum frontage as established in the Red Deer Land Use By-law No. 3156/96). Assuming 3.24 persons per household, approximately 599 people will occupy the R-1 component of the development.

- **R1-N Residential (Narrow Lot) District**

R1-N residential development is currently located within the southern portion of the site. No additional R1-N development is proposed for the northeast portion of the site. Development in this district will take the form of detached single family dwellings. Rear servicing will be provided for all lots.

The site currently contains approximately 130 R1-N Residential (Narrow Lot Detached Dwelling) with a minimum frontage of 10.40m per lot. Assuming 3.0 persons per household, 390 people will occupy the R1-N component of the development.

- **R1-A Residential Semi Detached District**

There will be an R1-A Semi Detached Duplex area in the form of three cul-de-sacs in the southern central part of the development. An additional R1-A site will be located in the north area. This strip of houses will act as a buffer between the R2 site and the R1 housing.

The south area will contain 42 units and the north area will contain 26 units, for a total of 68 units with a minimum frontage of 7.6m per lot (each side of semi-detached). Assuming 3.0 persons per household, 204 people will occupy these R1-A zones of the subdivision.

- **R2 Residential (Medium Density) District**

An R2 medium density residential site is currently located towards the south eastern portion of the site. This developed site is restricted to an adult community.

The 'adult village' site contains 77 R-2 Medium Density residential units in the form of duplexes and 96 similarly designated units in the form of fourplexes. Assuming 2.0 persons per household (an accurate ratio based on the retirement age demographic group occupying this R-2 development), 346 people will occupy this R-2 component of the overall development. (Because this will be a 'village' site, marketed to senior

citizens, an exception to the typical R-2 density is requested from 3.24 persons/unit to 2.0 persons/unit). The temporary access to this development will be constructed as a permanent access onto Joice Close at the same time as development of the south R1-A area (phase 12) proceeds.

An additional R2 site is proposed for the north end of the site. This site contains 2.55ha (6.30 acres). This site will contain a combination of 2-storey 8-Plex and 12-Plex products. Based on preliminary layouts a total of 148 units are proposed. This will lead to a density of 59 units/ha. Based on 3.0 persons per household for this type of housing we project 444 occupants. The development of the R2 site will provide a buffer between the very busy intersection of the major roadways and the remainder of the subdivision. Access to the proposed site will be limited to the main entrance road (near Johnstone Drive, as shown on Figure 4). An emergency access will be provided onto the lane on the south side of the R2 site. The emergency access will not be used for daily traffic in and out of the R2 site. The proposed development is as far away from the existing R1 and R1-N housing and will not significantly impact traffic flows within the subdivision.

▪ **R3 Residential (Multiple Family) District**

A parcel along the south western portion of the site contains an R-3 Residential (Multiple Family) District, restricted to a density of 55 units per hectare (D55).

Development in this area takes the form of townhouses and a 52 unit apartment building, providing suitable housing alternatives for low to medium income groups. The 52 unit apartment building occupies the previously proposed church site.

In total, the site will contain 58 R3 Residential (Multiple Family) units. Assuming 2.46 persons per townhouse household and 1.6 persons per apartment household, 225 people will occupy the R-3 component of the development.

4.1.2. Residential Density

The mix of housing types and densities is consistent with the City's planning policies for new communities. The overall density for the Johnstone Park Neighbourhood Area Structure Plan Area is expected to work out to approximately 45 people per hectare. The projected population is conservative based on the projected density for each type of housing. Due to the difficulty in projecting population, the current subdivision development guideline uses a unit density calculation. The guideline states that unit densities must be between 12.35 and 17.3 units per hectare. The proposed density in Johnstone Park will be 16.3 units per hectare.

Table 1 illustrates that 60.6 per cent of the site is for residential uses, 16.05 per cent for parks and open space, 2.38 per cent for the southeast detention pond, 19.88 per cent for streets and lanes and the balance for other neighbourhood uses, such as commercial and day-care facilities.

Table 1. Neighbourhood Area Structure Plan Statistics

Land Use	Hectares (+/-)	Acres (+/-)	Percentage
Residential - Single Family Detached Dwellings (R1)	8.235	20.348	16.49
Residential Semi-Detached (R1-A)	2.528	6.246	5.06
Residential - Single Family Narrow Dwellings (R1-N)	6.043	14.932	12.10
Residential – Multi-Family 8-Plex & 12-Plex (R2-D59)	2.550	6.301	5.11
Residential Duplex/Fourplex Dwellings (R2)	8.869	21.915	17.76
Residential Multi-Family (R3-D55)	2.028	5.011	4.06
Commercial	0.244	0.603	0.49
Day Care Site	0.091	0.225	0.18
Church Site (1)	0.000	0.000	0.00
Central Park Site/Storm Pond	4.998	12.350	10.00
Local Parks and Walkways	2.219	5.482	4.44
South East Detention Pond	1.186	2.931	2.38
P.U.L. Lots (incl. road widening)	1.016	2.511	2.03
Streets and Lanes	9.928	24.533	19.88
TOTAL DEVELOPABLE AREA	49.934	123.389	100.00
Industrial (I1)	7.946	19.635	
Road (Industrial)	1.464	3.617	
P.U.L. (Industrial)	0.314	0.776	
Total Area of Original ¼ Sections	59.658	147.420	

1. Church Site was previously advertised and no interested parties came forward.

Table 2. Density Statistics

Residential Designation	Dwelling Units	# of Persons
Residential - Single Family Detached Dwellings (R1)	185	599
Residential Semi-Detached (R1-A)	68	204
Residential - Single Family Narrow Dwellings (R1-N)	130	390
Residential Duplex/Four-Plex Dwellings (R2) (Seniors)	173	346
Residential – Multi-Family 8-Plex & 12-Plex (R2-D59)	148	444
Residential-Multi-Family (R3-D55 Apartment Building)	52	83
Residential-Multi-Family (R3-D55)	58	142
TOTAL	814	2208
TOTAL DEVELOPABLE AREA	49.934	49.934
TOTAL DENSITY (per ha)	16.30	44.22

(The alternative Land Use scenario for the church has been used, bringing the overall site density nearer to the maximum 45 people per hectare, as allowed for in the initial submission of this Neighbourhood Area Structure Plan.)

4.1.3. Industrial Uses

▪ **I-1 Industrial (Business Service) District**

A 9.410ha (23.252ac) I1 Industrial development is located at the southernmost portion of the subject site (see Figure 4). This area includes 1.7946 ha (3.617ac) for road.

A 0.314ha (0.776ac) linear P1 area, previously located south of the industrial parcel, has been consolidated with the industrial parcel, re-designated I1, and swapped with another parcel of the same size located northeast adjacent to Taylor Drive and bordering the east boundary of the industrial site.

A 20m wide bermed buffer Park is strategically located along the entire northern boundary of the industrial development to screen it from the residential uses to the north (see Section 4.1.7).

4.1.4. Institutional Uses

- **Church Site**

A 0.81ha (2.00 ac) parcel was initially set aside for a church site at the Johnstone Drive/central collector road intersection. This site was provided in accordance to the Red Deer Community Services Master Plan (The alternative use for this site would take the form of an R-3 Multiple Family development).

4.1.5. Day or Social Care

A site, located off the central collector road, has been set aside for a day care social care facility (see Figure 4). The site is approximately 0.091ha (0.225ac) in size. The site is currently developed as a day care institution.

As previously mentioned, the existing Red Deer Community Services Master Plan recommends the provision of a day care and social care facility on the site, however, discussions with Parkland Community Planning Services indicate the new policies will require only one 0.12ha (0.30ac) day care social care site.

4.1.6. Commercial

- **C3**

One commercial site is proposed for the plan area, at the northwest intersection of 75 Street and Taylor Drive. The 0.244ha (0.603ac) site will contain a small scale commercial building to service residents of the Johnstone Park area (the maximum permitted size is 0.25 ha (0.62ha). It should be noted that this commercial site will be self contained with its own loading/servicing area, apart from the adjacent residential rear lane (see Figure 6).

4.1.7. *Parks and Open Space*

▪ **P1 Parks and Recreation District**

There are several Parks and pathway systems, both existing and proposed, for Johnstone Park. They are summarized as follows (a table outlining the overall MR dedication within the Johnstone Park development is located in section 4.1.8):

- A 0.184ha (0.455ac) Park on the northwest edge of the site adjacent to Johnstone Drive (see 'Park A', Figure 5). This Park is intended to connect the residential development with the proposed Johnstone Drive

- A 0.537ha (1.327ac) linear park located within the Johnstone Park future road widening right-of-way, along the west side of the site. This 15m wide linear berm will serve as a buffer between Johnstone Drive and the public and residential uses located immediately east. -

A 0.479ha (1.184ac) linear park located along Johnstone Drive and west of the R3 site, within the Johnstone Park future road widening right-of-way, serves as a continuation of the previously discussed linear berm to the north. It too is 15m wide and will serve as a buffer between Johnstone Drive and the residential development to the east.

- A 0.337ha (0.833ac) Park located towards the centre of the northern residential component of the Plan (see 'Park B', Figure 5). This 'central park' is intended to be a passive recreation area with natural vegetation and a meandering pathway system.
- A 20m buffer strip between the industrial and residential areas in the south part of the plan, (see 'Park C', Figure 5) will be bermed and landscaped, and will incorporate a 1.5m meandering regional walking/cycling path. The berm will be 2.85m in height based on a 3.5: 1 slope and will be 1.161ha (2.869ac) in size. The berm will be landscaped and act as a connection between the existing pathway system in Glendale and the existing walkway along Johnstone Drive.

- A 0.314ha (0.776ac) park located in the extreme southeast corner of the subject site will be bermed and landscaped (see 'Park D', Figure 5). This site was part of a land swap involving a previous 0.314ha (0.78ac) strip of reserve land to the immediate south (see Section 4.1.3).

It is worth mentioning that all Park locations will take advantage of existing trees and vegetation where possible. This is consistent with the goals of the Ecological Profile (discussed in Section 4.2). Additionally, all trails will be 1.5m wide and constructed to city standards, with the exception of the trail along Johnstone Drive which is 3.0 metres wide.

4.1.8. *Public Service*

▪ **PS - Public Service District**

Two Public Service areas are located on the subject site. The first, a 1.500ha (3.710ac) area located within the central park site, contains a storm pond/recreation area. The second, a 1.186ha (2.931ac) site located towards the south east boundary, also contains a storm pond.

▪ **PS - (MSR)- School) Site**

A 3.498ha (8.640ac) Public Elementary School site was initially provided for on the east side of Johnstone Drive and the north side of the primary collector road which runs in an east-west direction through the site. The school site has been converted to a central park site.

Table 3. Municipal Reserve Dedication Statistics

Municipal Reserve	Hectares	Acres
Park 'A'	0.184	0.455
Park 'B'	0.337	0.833
20m Buffer	1.161	2.869
Buffer along north side of R2 site	0.095	0.237
Central Park Site (with storm pond)	4.998	12.350
TOTAL MUNICIPAL RESERVE	6.775	16.741
TOTAL DEVELOPABLE AREA	49.934	123.385
PERCENTAGE	13.57	

Table 3 shows that the total municipal reserve dedication is 13.57 per cent. As previously mentioned, this NASP must supply 10 percent of the developable land for municipal reserve. Therefore, the above mentioned statistics result in an over-dedication of 3.57 per cent.

4.2 ECOLOGICAL PROFILE

The natural landscape of the site is described in the Johnstone Park Ecological Profile, prepared by the City of Red Deer in 1996. The plan has been prepared using the recommendations in the Ecological Profile as a framework for the site layout. The Plan's response to the various recommendations is described as follows (it may be helpful to refer to Figure 2 in this document, Figure 1 in the Ecological Profile of the Johnstone Park Natural Area as prepared by the City of Red Deer Recreation, Parks and Culture Department when reading this section):

- **Recommendation #1:**

'A bike path should be constructed along the buffer from 64th Avenue to the Zone 5 treed area consideration should be given to extending the bike path further west to the Edgar Athletic park.'

Provision:

A 20m landscaped buffer strip, will contain a 1.5m regional walking and/or cycling path. The path extends to the western boundary of the site.

- **Recommendation #2:**

'The northernmost social care facility should be relocated to within the Zone 9 vegetation area... '

Provision:

The recommendation is no longer applicable as the Neighbourhood Area Structure Plan has since changed. However, the Plan, as presented in this submission, attempts to maintain as much of the present homestead vegetation as possible through the placement of a public park (see 'Park B', Figure5).

- **Recommendation #3**

'Zone 4 treed area should be fully preserved and integrated into the school/recreation site.'

Provision:

Much of the Zone 4 treed area will be maintained. (See Figure 4).

- **Recommendation #4**

'A small constructed/natural park for passive recreation should be built to displace some of the unpleasant appearing poplars found in the southwest end of Zone 2...'

Provision:

As the majority of Zone 2 vegetation has been removed to construct Taylor Drive and the few remaining trees will be those located in the southwest end of Zone 2 (i.e. the 'unpleasant appearing poplars'), it has been decided that this zone is not salvageable.

- **Recommendation #5**

'.... perceivable habitat area found in Zone 3. Part of this habitat could be developed into a passive park.'

Provision:

A public park has been created which maintains as many of the aspens and balsam poplars as possible (see 'Park B', Figure 5).

- **Recommendation #8:**

'A large part of Zone 1 should be preserved as a natural sound and visual barrier from 64th Avenue noise.'

Provision:

Much of Zone 1 will not be preserved. The R-2 development will be constructed to include visual and sound attenuation along Taylor Drive.

4.3 ENVIRONMENTAL CONCERNS

A portion of the Johnstone Park subdivision was contaminated with

hydrocarbons from a former tanker washing operation. The location of the site is indicated on Figure 3.

The contaminated site required remediation before development could occur on it. A range of techniques was researched to determine the most appropriate for the proposed future land use. The remediation procedure is described in the letter from Parkland Geotechnical Consulting Ltd., a copy of which is in Appendix A. The approval of the site for development is noted in this letter.

A 20m setback for residential development (with the exception of the collector road) from the contaminated area is required by the City of Red Deer. Prior to the remediation being undertaken the setback will be adhered to. Once Alberta Environment issues a reclamation certificate, development may proceed within the setback area.

4.4 TRANSPORTATION

The location of residential collector and local roads and lanes are indicated on Figure 1. Lanes will be constructed in a segmented fashion and no continuous curves will be used. An amendment to the Northwest ASP to allow for an altered collector road pattern was submitted with the initial submission of this NASP.

4.4.1. Internal Road Network

A primary, central collector road has been provided for linkage to both Johnstone Drive and Taylor Drive. Figure 6A illustrates the dimensions of this road.

A second access to Johnstone Drive will be provided at the north end of the subdivision. This access will convey traffic to the series of cul-de-sacs proposed for the northern low-density, single family residences.

Access to the adult community (R2 site) is restricted to 2 accesses, one location off the primary collector road Jewel Street and a second access off of the collector road Joice Close.

4.4.2. *Pedestrian Linkage*

The pedestrian access issue has been addressed in this NASP, in that a 3.00m separate asphalt sidewalk conducts pedestrian traffic north and south along Johnstone Drive. This linkage is continued internally along the central collector road by means of a 1.50m sidewalk.

A pedestrian link by means of a path system along the 20.0m berm separating the industrial portion from the residential components is proposed to allow pedestrian traffic to continue from Johnstone Drive to Taylor Drive.

An open trail system is provided for through the central park, which will connect the pedestrian traffic from the north residential portion of the site.

All pedestrian linkages are detailed on Figure 4.

4.5 PHASING

Orderly phased developments will be accommodated on the site assuming that the provision of off-site infrastructure has been coordinated. Typical City of Red Deer urban standards are perceived to be the preferred servicing and infrastructure option (see Figure 7 for proposed phasing).

5.0 SERVICING

The Neighbourhood Area Structure Plan area will be partially serviced by existing infrastructure in Taylor Drive along the east boundary and in Johnstone Drive along the north and west boundaries. Adequate storm sewer capacity and sanitary sewer capacity are available for all portions of the site. Water distribution mains are available to supply required potable water for residential mixed-use and industrial development. Shallow utility infrastructure is located adjacent to the site and is available for further expansion.

5.1 WATER DISTRIBUTION

The water distribution system is a direct extension of the existing water main distribution system from the subdivision to the east.

A 400mm feeder main runs through the center of the site from the east subdivision and connects up to the same size water main running parallel with Johnstone Drive on the west side of the subdivision. This feeder is identified on Figure 8.

Various water networks to the north and to the south on-site branch off this 400mm feeder main, to provide a water distribution system to the existing and proposed neighbourhoods.

The south system is looped to existing water lines at the south east and south west corners of the site. The north system will be looped to an existing stub at the north portion of Johnstone Drive.

5.2 SANITARY SEWERS

The sanitary sewers network is split into two sewer systems. The north system, as indicated on Figure 9 by the hatched portion of the subdivision, is a direct extension to the now existing sanitary sewer system in Johnstone Crossing, a subdivision to the north of this site.

This northern sanitary sewer network is a gravity draining system, using 200mm mains.

The south system connects to the existing sanitary system running along Johnstone Drive to the west of the site. This south sanitary system is comprised of 200mm pipe, with the exception of the 250mm pipe that crosses the central collector road, travels in the lane directly adjacent to this road and finally connects up to the existing 300mm trunk main on the west side of Johnstone Drive. This network is illustrated on Figure 9.

5.3 STORM WATER MANAGEMENT

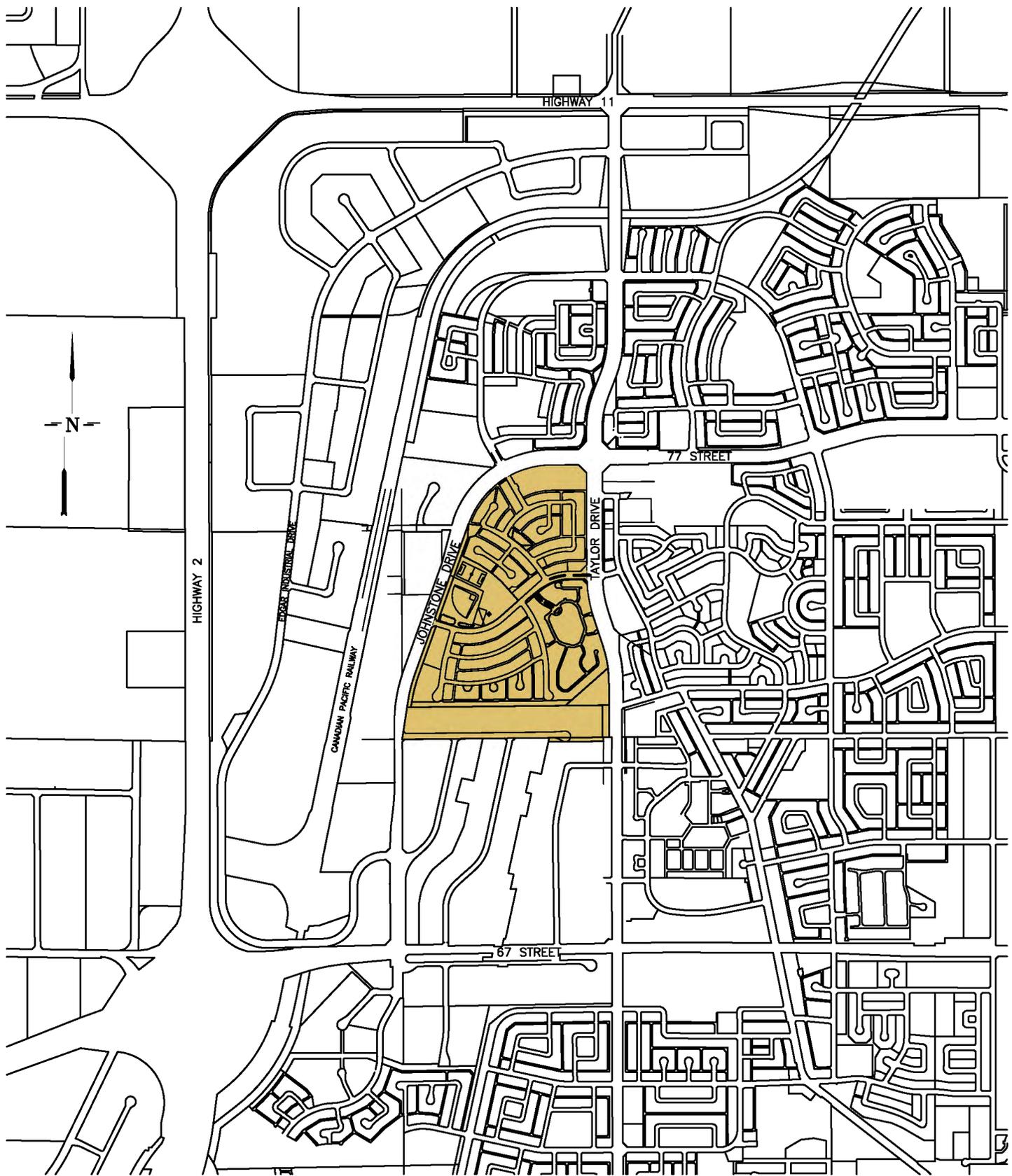
The subdivision is to be serviced by two storm water management facilities; one located in the central park and the other in the south east corner of the subdivision.

The majority of the subdivision will be serviced by the central storm pond, both by means of storm sewers and overland drainage. Figure 10 and Figure 11 illustrate how the subdivision is split into north and south drainage patterns. The north portion, which will not use the storm pond facilities, will connect to the existing extension of the storm sewer at the north end of Johnstone Drive. This extension has been sized for the 1:100 year event, and therefore, the north portion of this site has no need for a storm pond facility. Detention for this area is provided off-site.

The south east storm pond facility accepts some runoff from the R2 site; however the majority of use by this facility comes from the existing Industrial Park to the south.

All run-off ultimately drains to the Red Deer River.

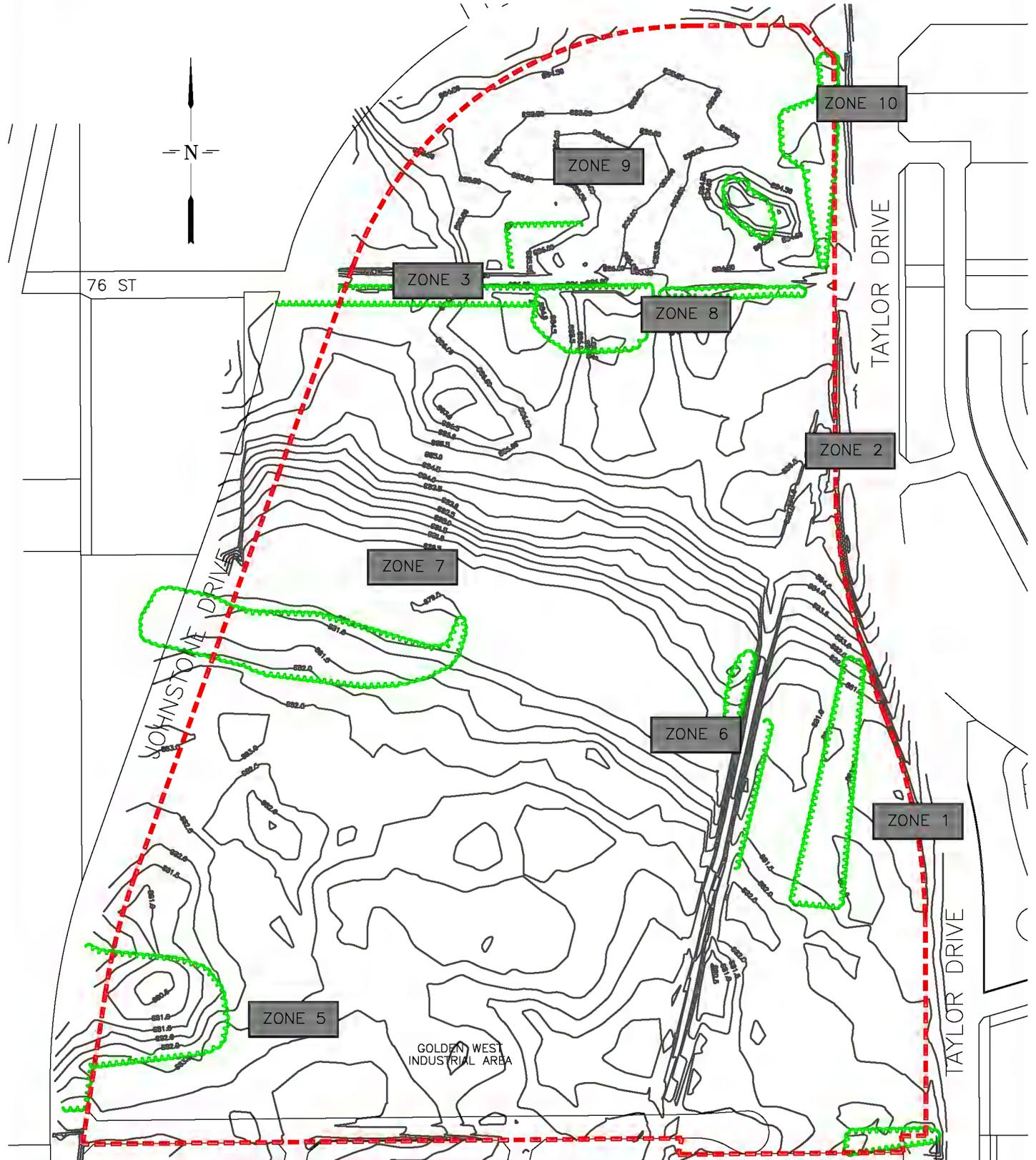
CAROLINA HOMES INC. NEIGHBOURHOOD AREA STRUCTURE PLAN



DATE DRAWN: FEBRUARY 22, 2006
DATE REVISED: April 26, 2007
DRAWN BY: BLZ
SCALE: 1:20,000
LOCATION: \PROJ5\Johnstone Park\NASP
April Revisions\FIGURE 1 - LOCATION.dwg

**FIGURE 1
LOCATION**

CAROLINA HOMES INC. NEIGHBOURHOOD AREA STRUCTURE PLAN



DATE DRAWN: FEBRUARY 22, 2006
 DRAWN BY: BLZ
 SCALE: 1:5000
 LOCATION: \PROJS\Johnstone Park\NASP\
 FIGURE 2 - SITE FEATURES.dwg

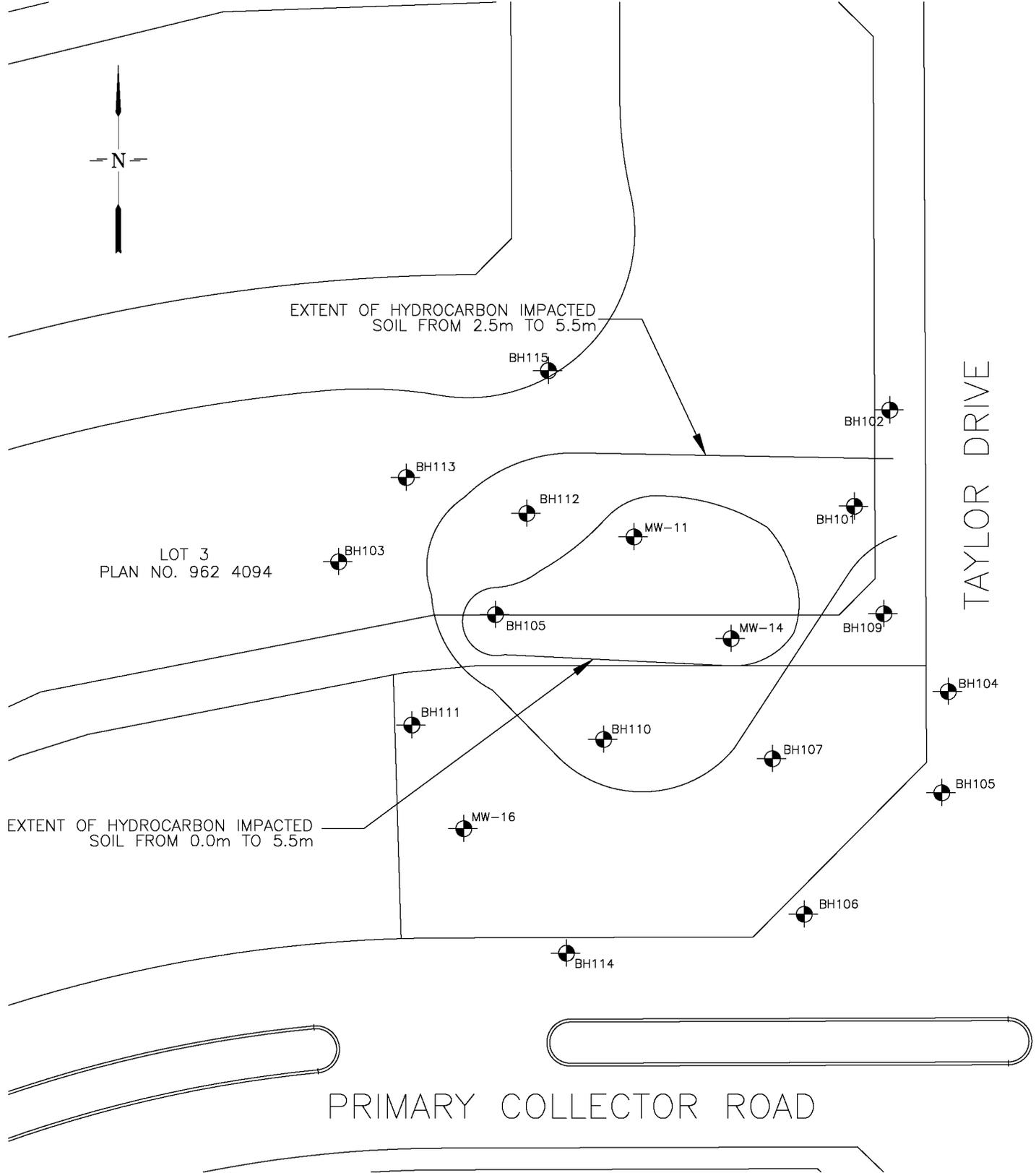
LEGEND:

-  OUTLINE BOUNDARY
-  ORIGINAL GROUND CONTOURS
-  ORIGINAL TREE LINE

 ZONE 1 ECOSPACE AREAS

**FIGURE 2
SITE FEATURES**

CAROLINA HOMES INC. NEIGHBOURHOOD AREA STRUCTURE PLAN



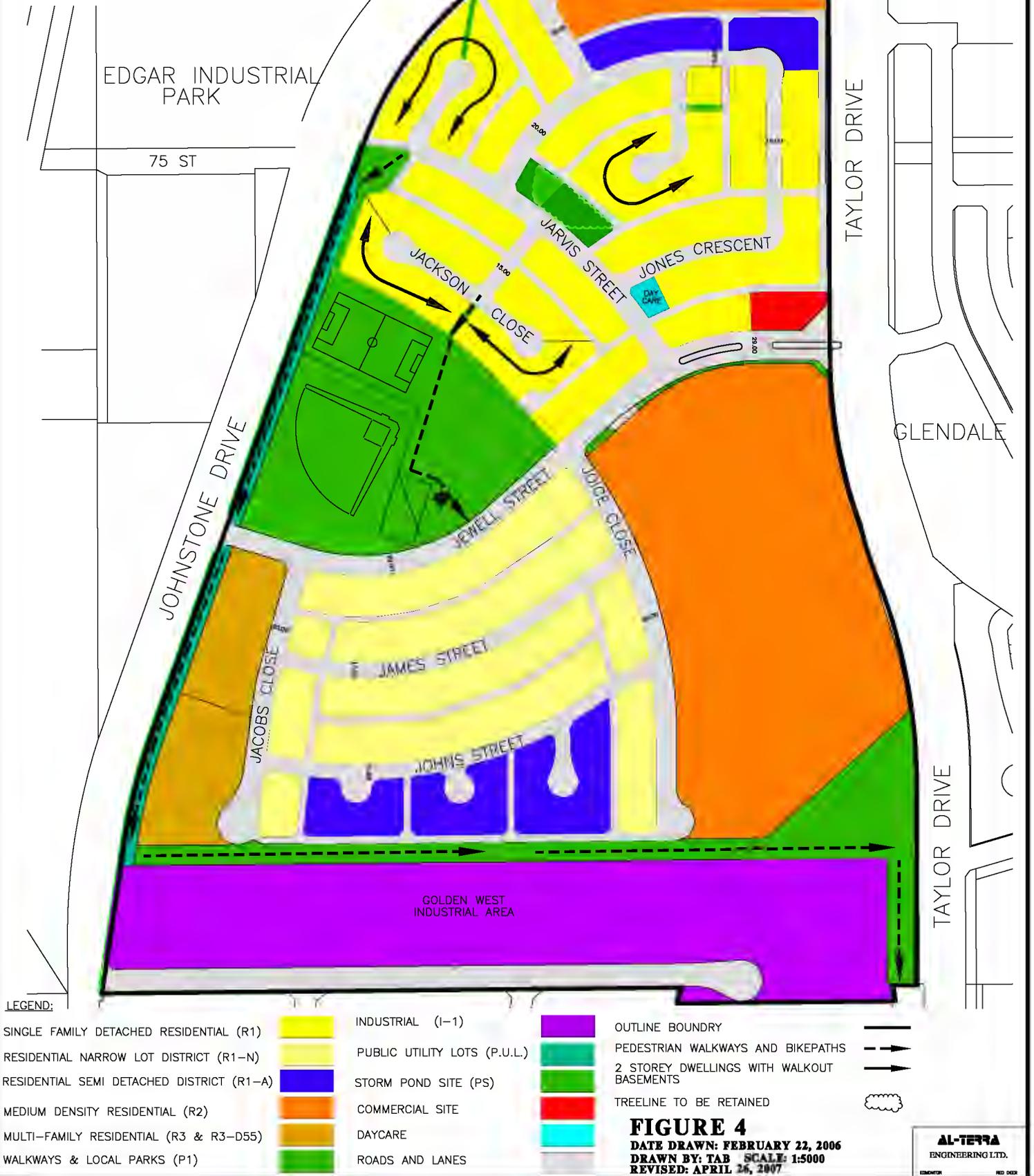
DATE DRAWN: FEBRUARY 22, 2006
DRAWN BY: BLZ
SCALE: 1:750
LOCATION: \PROJS\Johnstone Park\NASP\
FIGURE 3 - ENVIRONMENTAL CONTAMINATION.dwg

FIGURE 3
EXTENT OF
ENVIRONMENTAL
CONTAMINATION

CAROLINA HOMES INC. NEIGHBOURHOOD AREA STRUCTURE PLAN

Bylaw No. 3239/B-2000

Identification of potential lots for 2 storey dwellings with walkouts.



CAROLINA HOMES INC. NEIGHBOURHOOD AREA STRUCTURE PLAN

Bylaw No. 3239/B-2000

Identification of potential lots for 2 storey dwellings with walkouts.

EDGAR INDUSTRIAL PARK

75 ST

JOHNSTONE DRIVE

JACOBS CLOSE

JAMES STREET

JOHNS STREET

GOLDEN WEST INDUSTRIAL AREA

JACKSON CLOSE

JEWELL STREET

JOICE CLOSE

JARVIS STREET

JONES CRESCENT

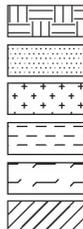
JAY CARE

TAYLOR DRIVE

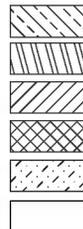
TAYLOR DRIVE

LEGEND:

- SINGLE FAMILY DETACHED RESIDENTIAL (R1)
- RESIDENTIAL NARROW LOT DISTRICT (R1-N)
- RESIDENTIAL SEMI DETACHED DISTRICT (R1-A)
- MEDIUM DENSITY RESIDENTIAL (R2)
- MULTI-FAMILY RESIDENTIAL (R3 & R3-D55)
- WALKWAYS & LOCAL PARKS (P1)



- INDUSTRIAL (I-1)
- PUBLIC UTILITY LOTS (P.U.L.)
- STORM POND SITE (PS)
- COMMERCIAL SITE
- DAYCARE
- ROADS AND LANES



- OUTLINE BOUNDARY
- PEDESTRIAN WALKWAYS AND BIKEPATHS
- 2 STOREY DWELLINGS WITH WALKOUT BASEMENTS
- TREELINE TO BE RETAINED

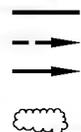
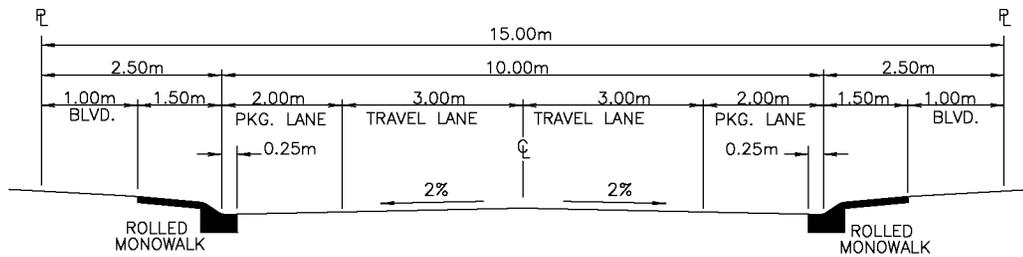
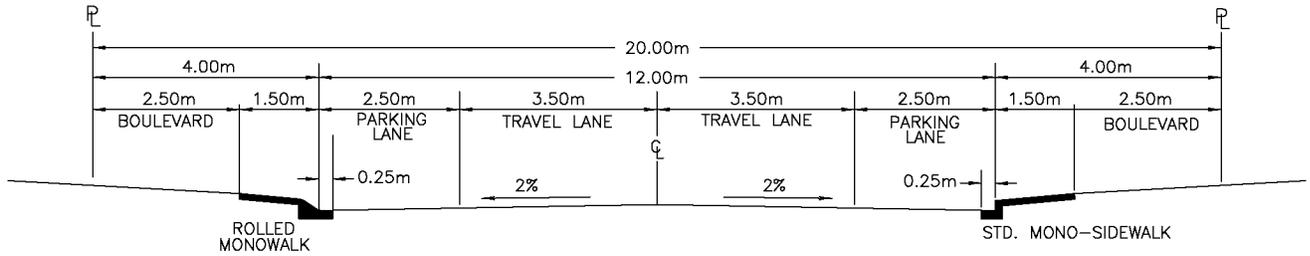


FIGURE 4
DATE DRAWN: JULY 19, 2006
DRAWN BY: BLZ SCALE: 1:5000

AL-TERRA
ENGINEERING LTD.

EDMONTON RED DEER

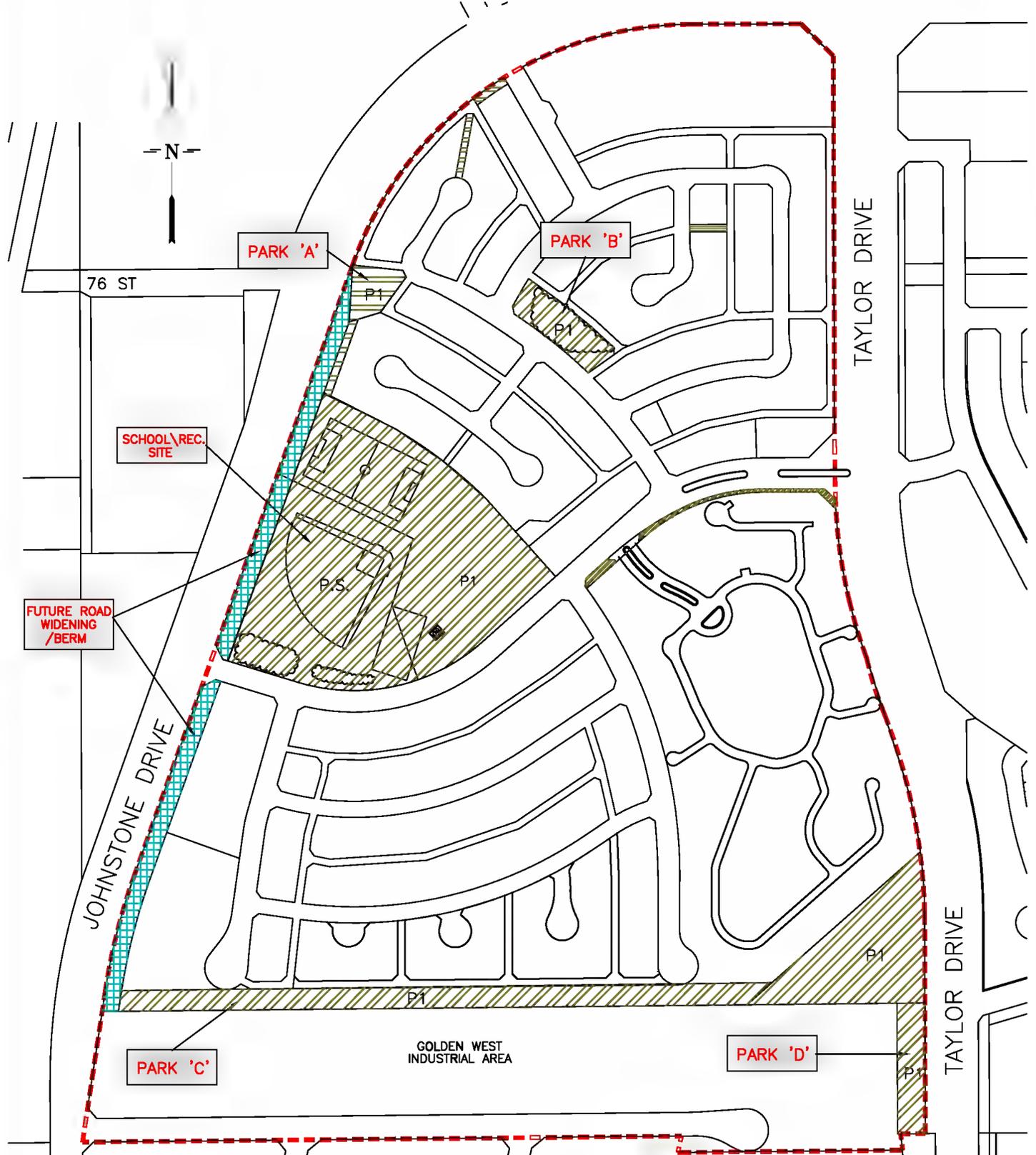
CAROLINA HOMES INC. NEIGHBOURHOOD AREA STRUCTURE PLAN



DATE DRAWN: FEBRUARY 23, 2006
 DRAWN BY: BLZ
 SCALE: N.T.S.
 LOCATION: \PROJS\Johnstone Park\NASP\
 FIGURE 4A - ROAD DETAILS.dwg

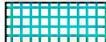
FIGURE 4A
RESIDENTIAL UNDIVIDED COLLECTOR
AND LOCAL ROADWAY DETAILS

CAROLINA HOMES INC. NEIGHBOURHOOD AREA STRUCTURE PLAN



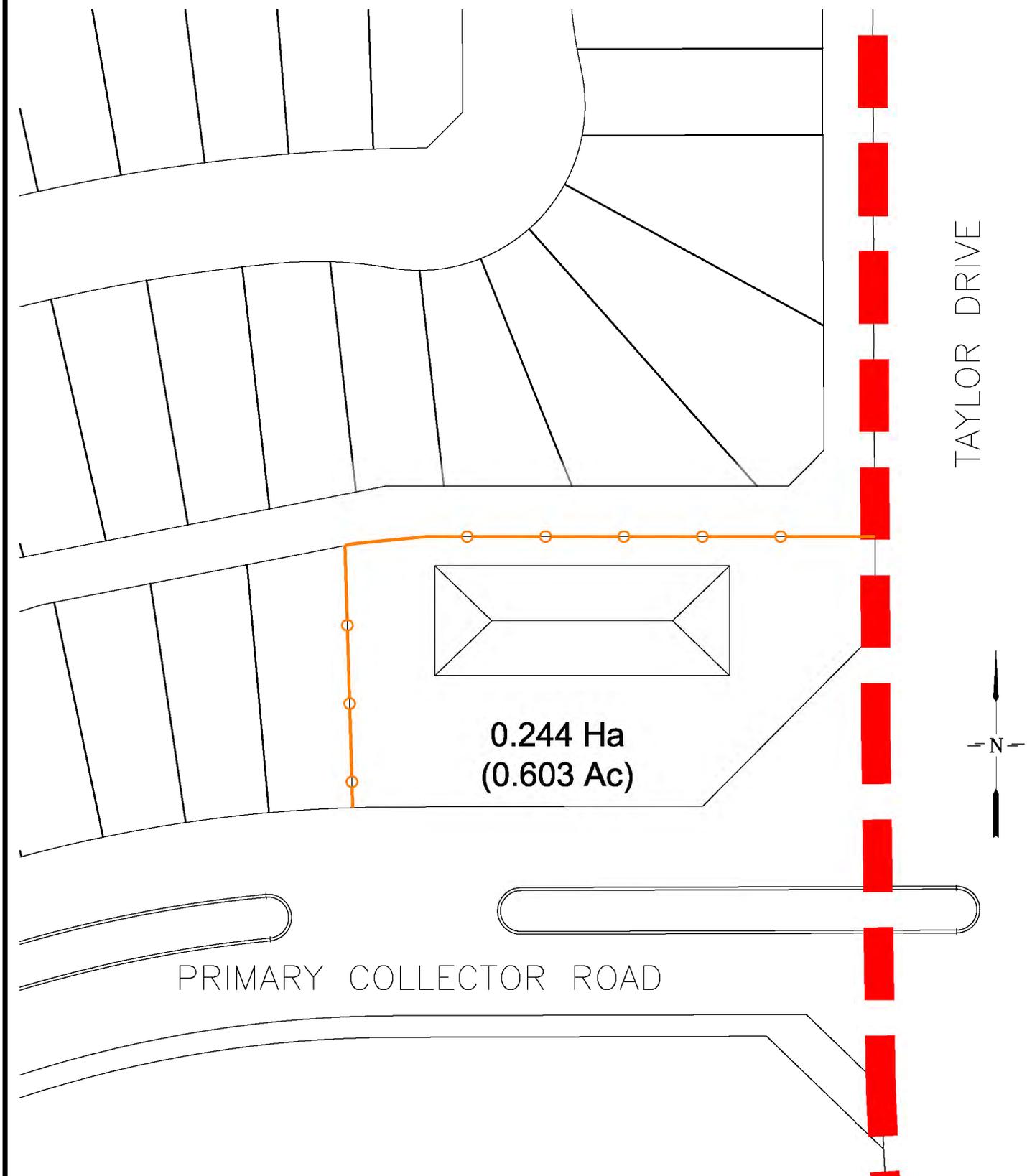
DATE DRAWN: MARCH 16, 2006
 DRAWN BY: BLZ
 SCALE: 1:5000
 LOCATION: \PROJS\Johnstone Park\NASP\
 April Revisions\FIGURE 5 - PARK KEY PLAN.dwg
 REVISED: April 26, 2007

LEGEND:

- P.U.L. 
- FUTURE ROAD WIDENING/BERM 
- PARK 
- TREES TO BE RETAINED 

**FIGURE 5
PARK/OPEN SPACE
KEY PLAN**

CAROLINA HOMES INC. NEIGHBOURHOOD AREA STRUCTURE PLAN

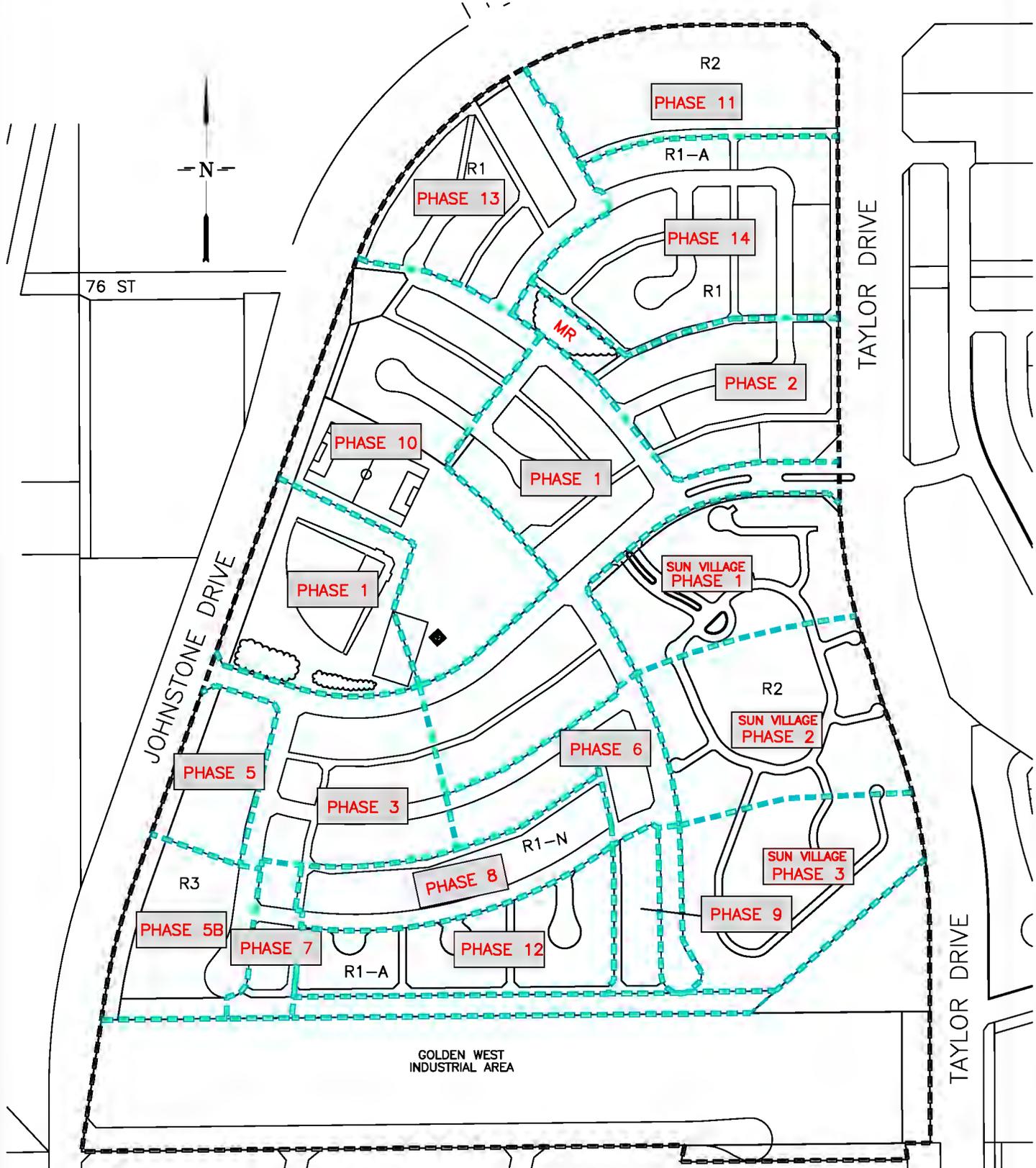


LEGEND:
- - - OUTLINE BOUNDARY
- o - WOOD FENCE

DATE DRAWN: FEBRUARY 22, 2006
DRAWN BY: BLZ
SCALE: 1:750
LOCATION: \PROJS\Johnstone Park\NASP\
FIGURE 6 - CONCEPTUAL COMMERCIAL LAYOUT.dwg

**FIGURE 6
CONCEPTUAL
COMMERCIAL LAYOUT**

CAROLINA HOMES INC. NEIGHBOURHOOD AREA STRUCTURE PLAN



LEGEND:

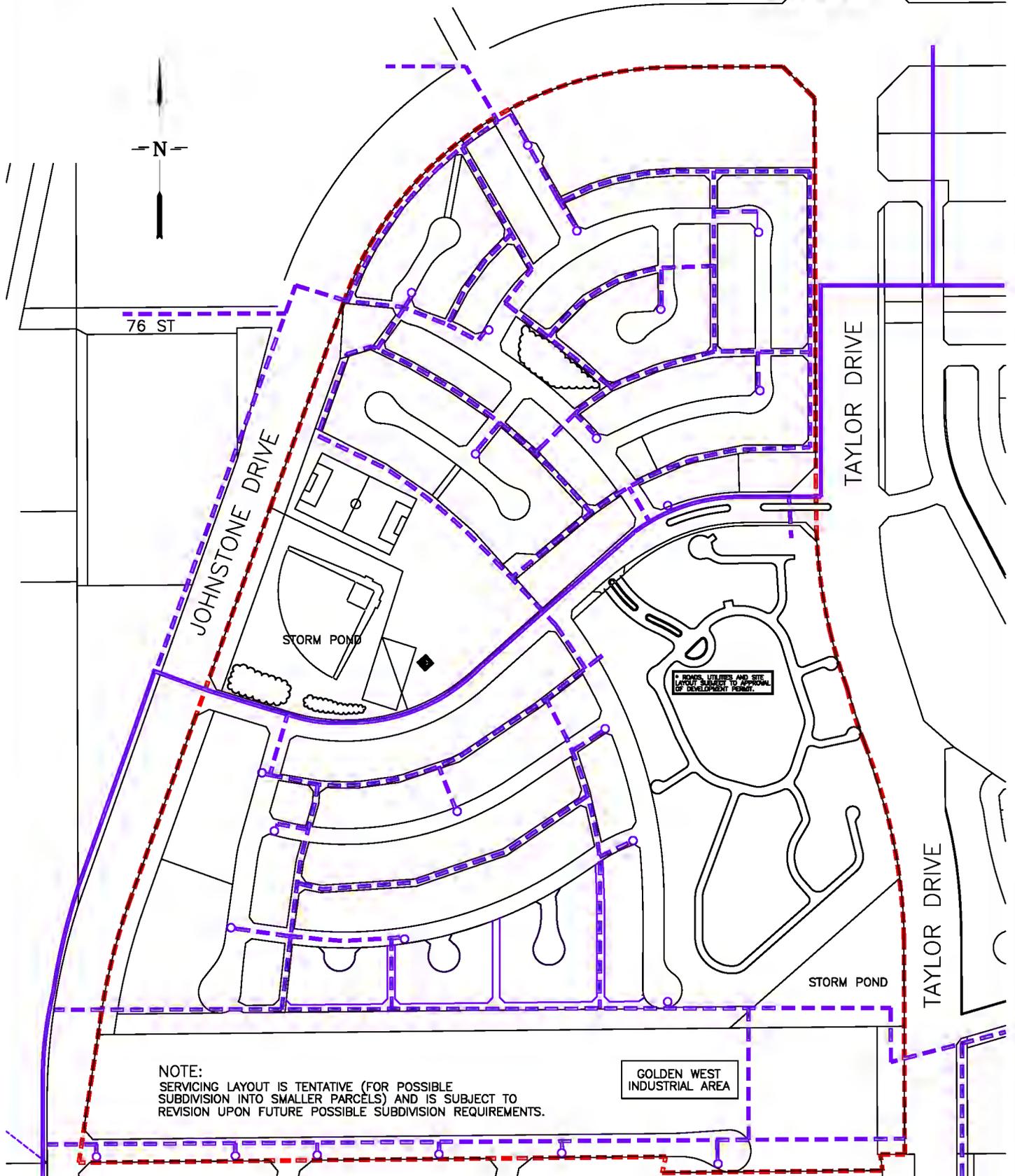
- OUTLINE BOUNDARY
- PHASE BOUNDARY

NOTE: PHASE 4 IS NOT APPLICABLE.

DATE DRAWN: FEBRUARY 22, 2006
 DRAWN BY: BLZ
 SCALE: 1:5000
 LOCATION: \PROJS\Johnstone Park\NASP\
 April Revisions\FIGURE 7 - PHASING CONCEPT.dwg
 REVISED: April 26, 2007

**FIGURE 7
PHASING CONCEPT**

CAROLINA HOMES INC. NEIGHBOURHOOD AREA STRUCTURE PLAN

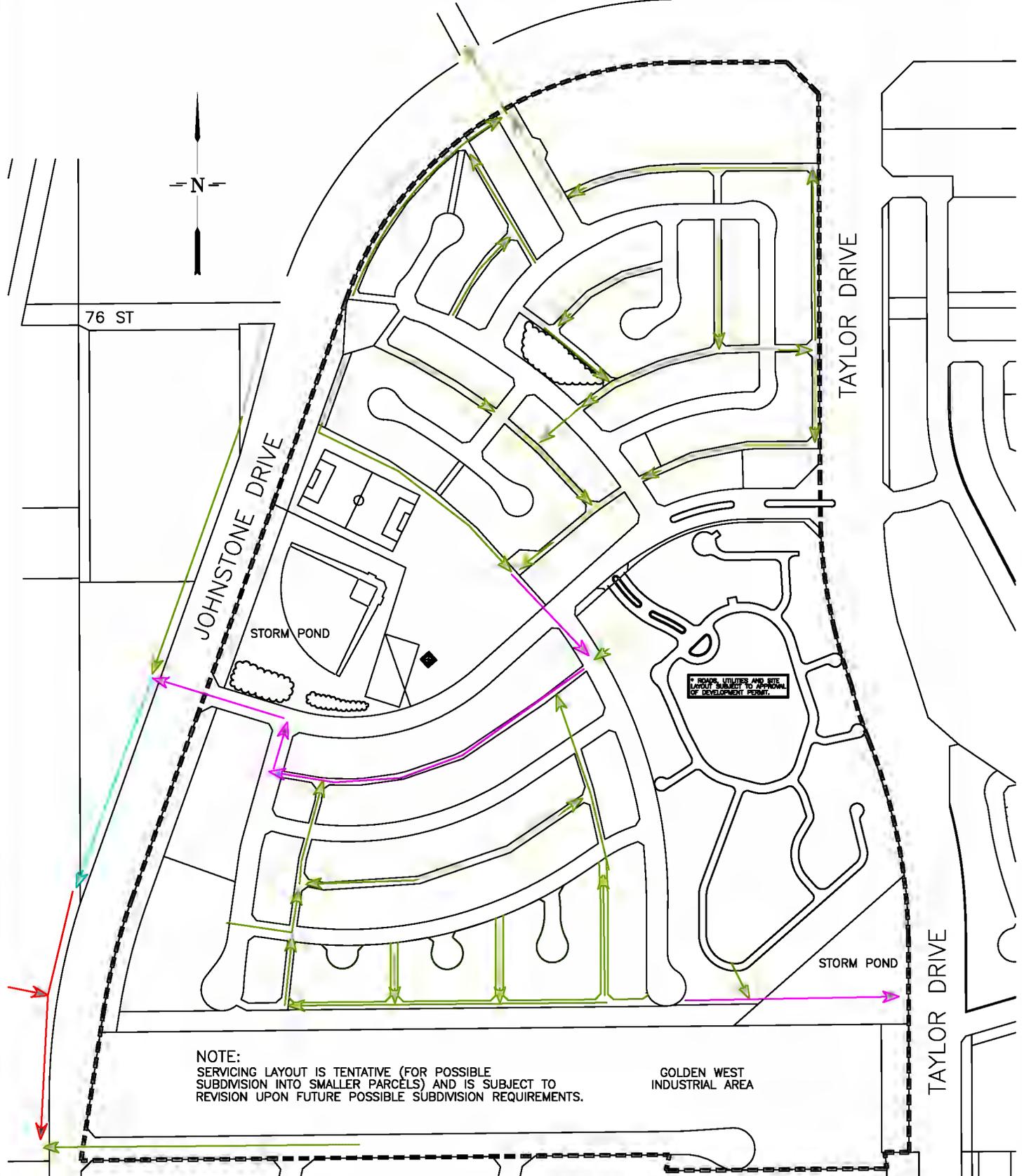


DATE DRAWN: FEBRUARY 24, 2006
 DRAWN BY: BLZ
 SCALE: 1:5000
 LOCATION: \PROJS\Johnstone Park\NASP\
 April Revisions\FIGURE 8 - WATER DISTRIBUTION.dwg
 REVISED: April 26, 2007

- LEGEND:**
- - - OUTLINE BOUNDARY
 - FEEDER WATER MAIN
 - - - WATER MAIN
 - HYDRANT

**FIGURE 8
WATER
DISTRIBUTION**

CAROLINA HOMES INC. NEIGHBOURHOOD AREA STRUCTURE PLAN



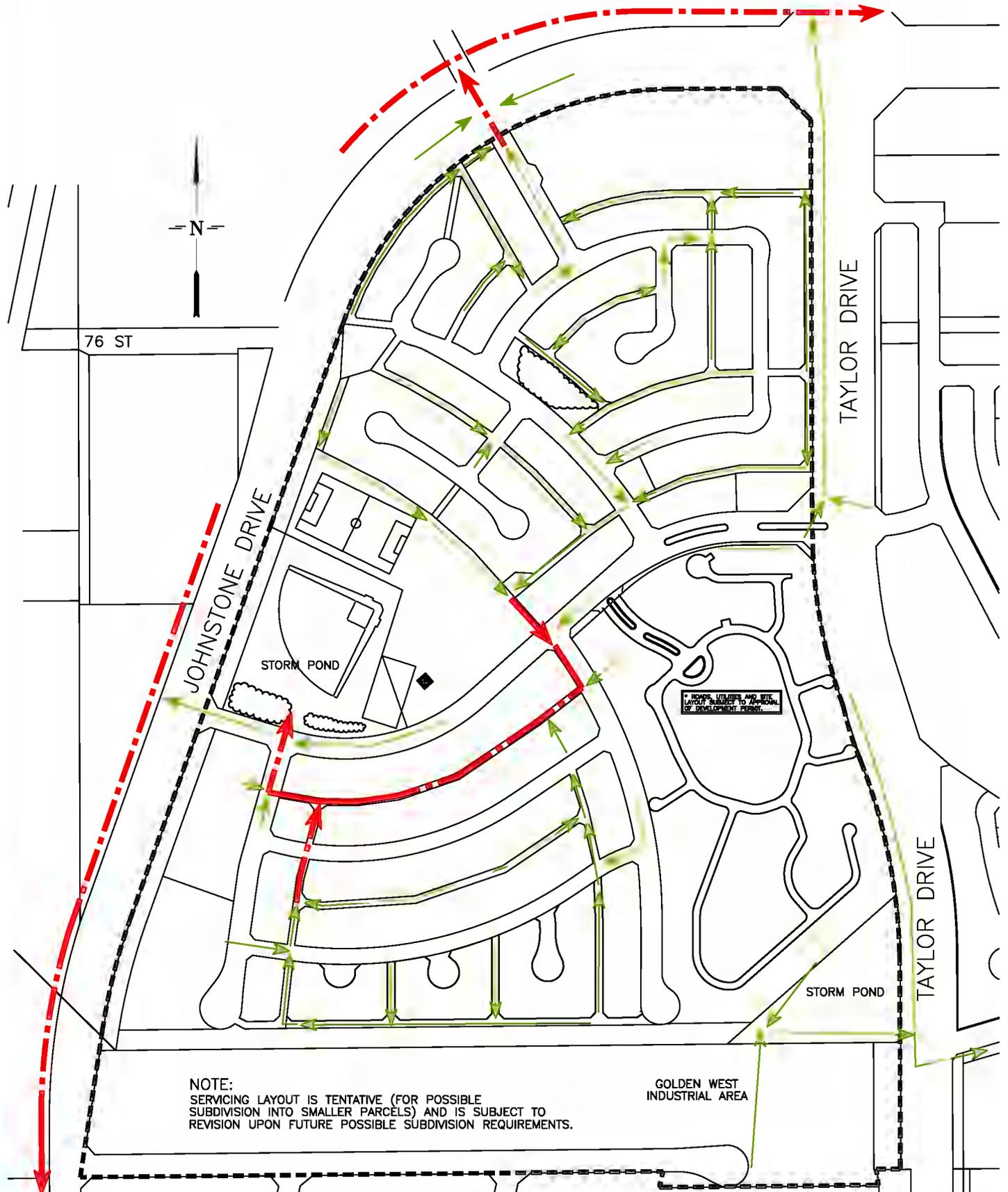
LEGEND:

- OUTLINE BOUNDARY
- ← 200mm SANITARY
- ← 250mm SANITARY
- ← 300mm SANITARY
- ← 450mm SANITARY

DATE DRAWN: FEBRUARY 23, 2006
 DRAWN BY: BLZ
 SCALE: 1:5000
 LOCATION: \PROJS\Johnstone Park\NASP\
 April Revisions\FIGURE 9 - SANITARY SEWERS.dwg
 REVISED: April 24, 2007

**FIGURE 9
SANITARY
SEWERS**

CAROLINA HOMES INC. NEIGHBOURHOOD AREA STRUCTURE PLAN



NOTE:
SERVICING LAYOUT IS TENTATIVE (FOR POSSIBLE
SUBDIVISION INTO SMALLER PARCELS) AND IS SUBJECT TO
REVISION UPON FUTURE POSSIBLE SUBDIVISION REQUIREMENTS.

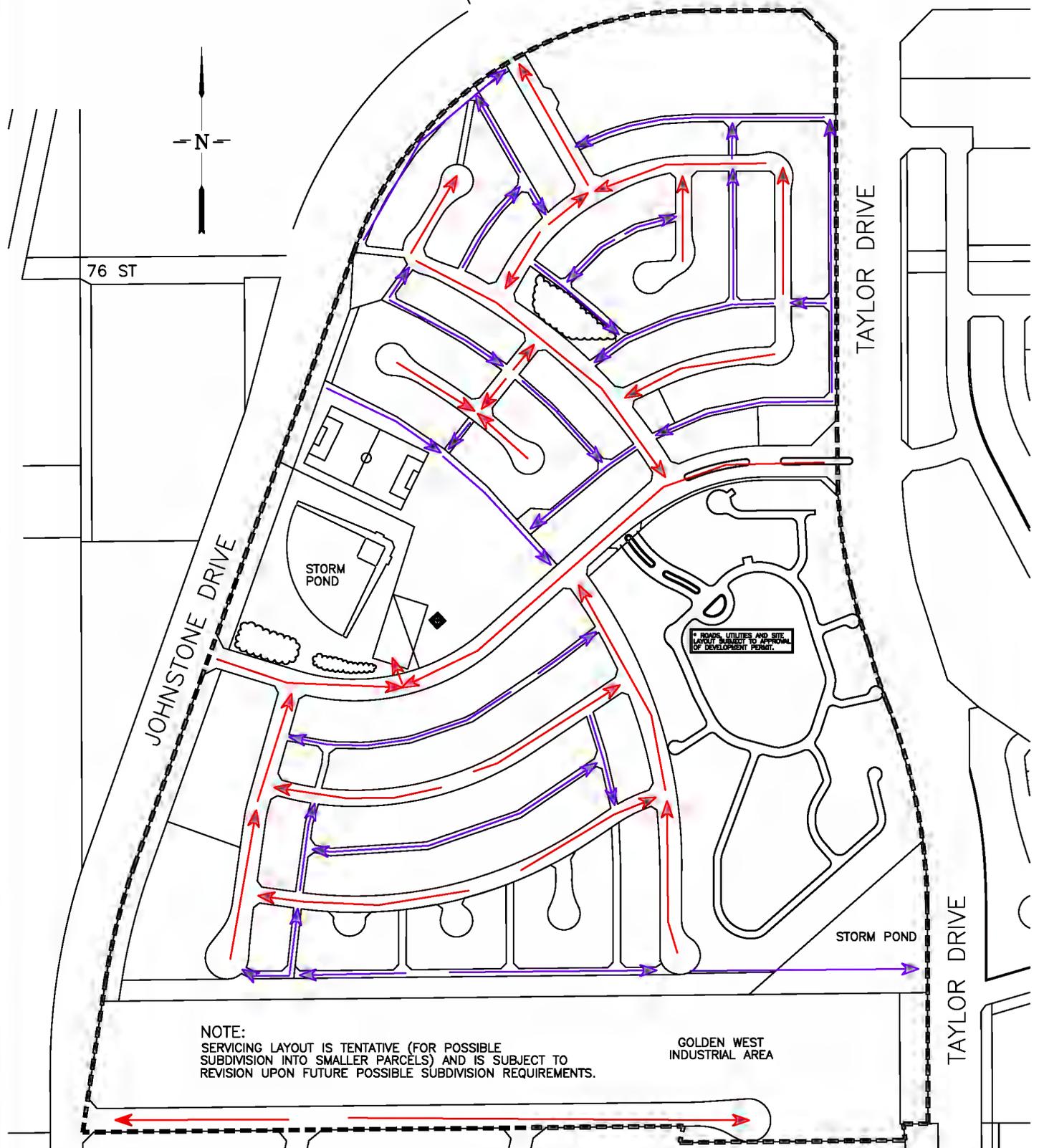
* HOME UTILITIES AND SITE
LAYOUT SUBJECT TO APPROVAL
OF DEVELOPMENT PERSONNEL

DATE DRAWN: FEBRUARY 23, 2006
DRAWN BY: BLZ
SCALE: 1:5000
April Revisions\LOCATION\PROJS\Johnstone Park\NASP\
FIGURE 10 - STORM SEWERS.dwg
REVISED: April 26, 2007

LEGEND:
 - - - - - OUTLINE BOUNDARY
 ← → MINOR STORM
 ← - - - - - STORM TRUNK

**FIGURE 10
STORM SEWERS**

CAROLINA HOMES INC. NEIGHBOURHOOD AREA STRUCTURE PLAN



NOTE:
SERVICING LAYOUT IS TENTATIVE (FOR POSSIBLE
SUBDIVISION INTO SMALLER PARCELS) AND IS SUBJECT TO
REVISION UPON FUTURE POSSIBLE SUBDIVISION REQUIREMENTS.

GOLDEN WEST
INDUSTRIAL AREA

LEGEND:

- OUTLINE BOUNDARY
- ← DIRECTION FLOW IN ROADS
- ← DIRECTION FLOW IN LANES

**FIGURE 11
OVERLAND
DRAINAGE**

DATE DRAWN: FEBRUARY 24, 2006

DRAWN BY: BLZ

SCALE: 1:5000

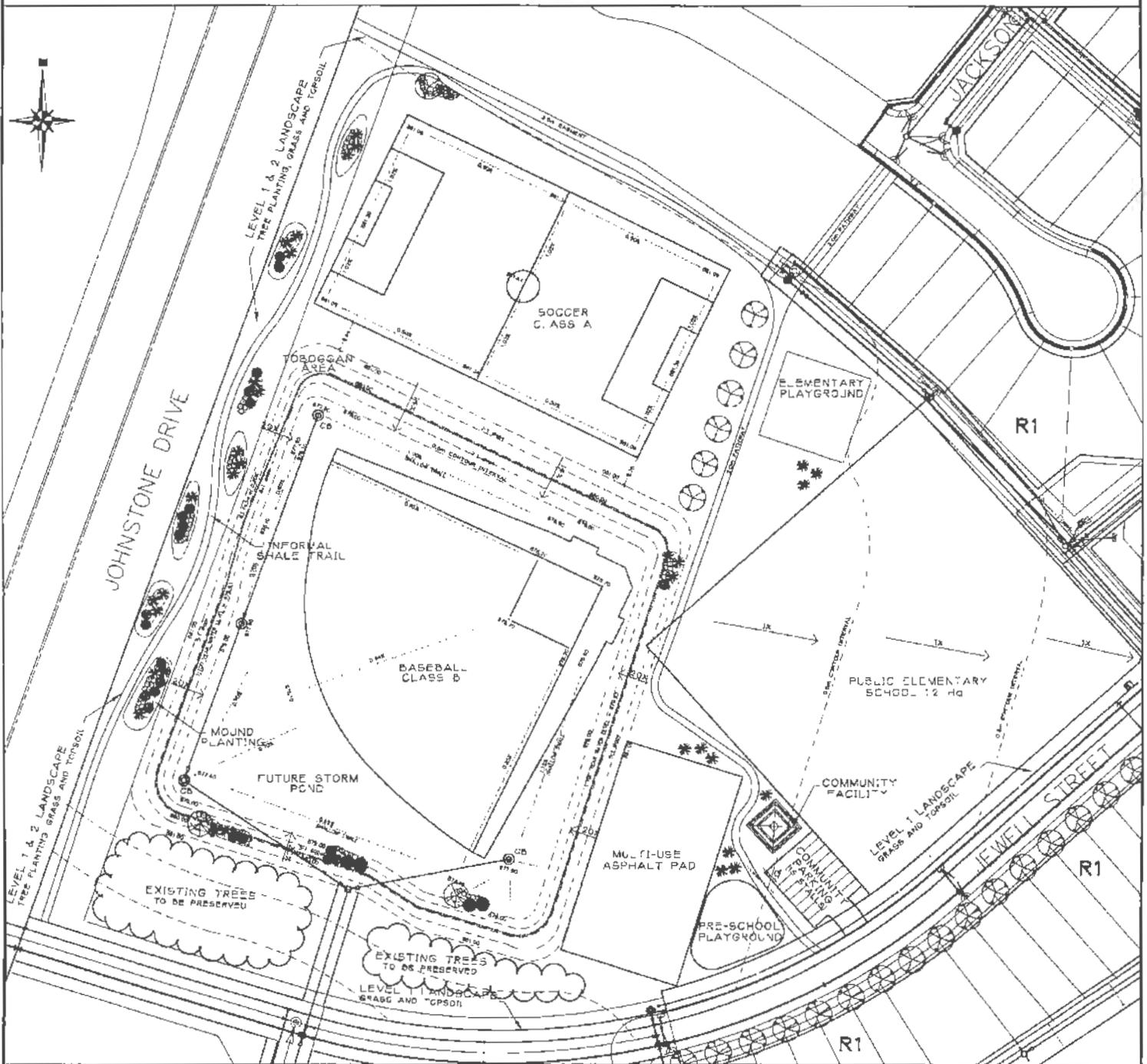
April Revisions\LOCATION\PROJ5\Johnstone Park\NASP\

FIGURE 11 - OVERLAND DRAINAGE.dwg

REVISED: April 26, 2007

APPENDIX A
PARKS/ OPEN SPACE

GENCAN DEVELOPMENT LTD. NEIGHBOURHOOD AREA STRUCTURE PLAN

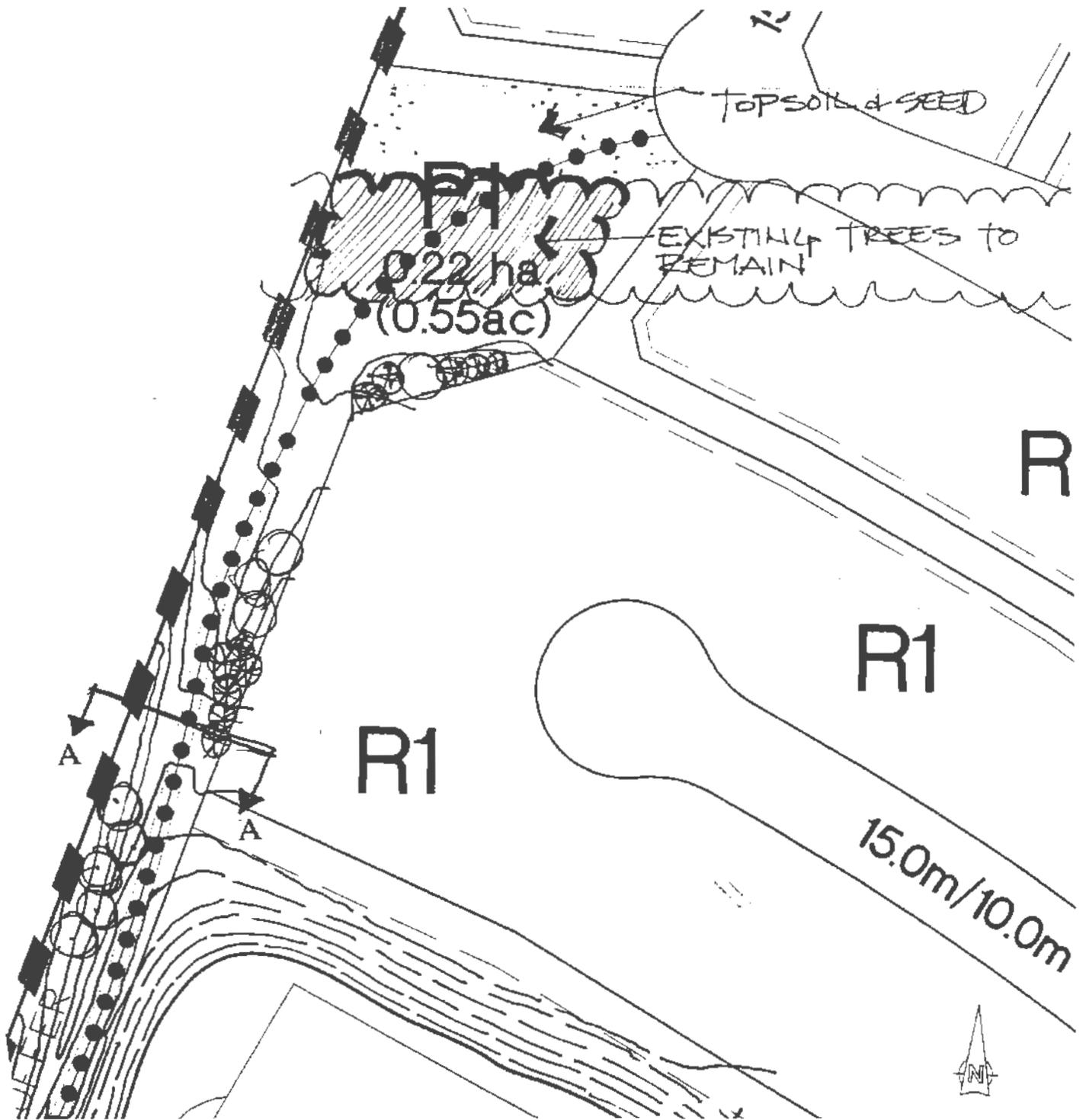


PREPARED BY:
IBI GROUP

SCALE: N.T.S.
PREPARED FEBRUARY 2000

SCHOOL/RECREATION SITE CONCEPTUAL LAYOUT

GENCAN DEVELOPMENT LTD. NEIGHBOURHOOD AREA STRUCTURE PLAN

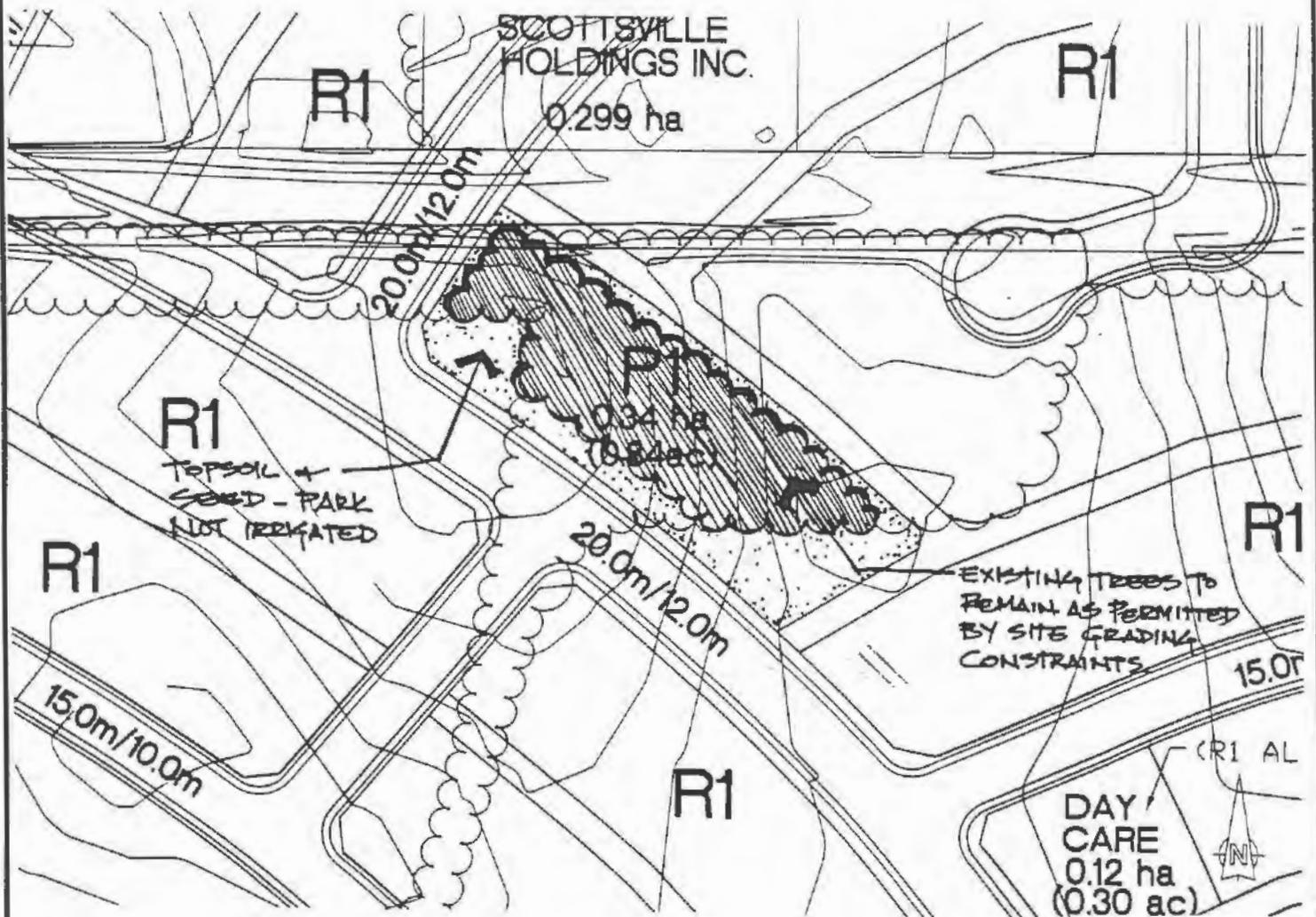


PREPARED BY:
IBI GROUP

SCALE: N.T.S.
PREPARED JUNE, 99

PARK 'A'
CONCEPTUAL LAYOUT

GENCAN DEVELOPMENT LTD. NEIGHBOURHOOD AREA STRUCTURE PLAN

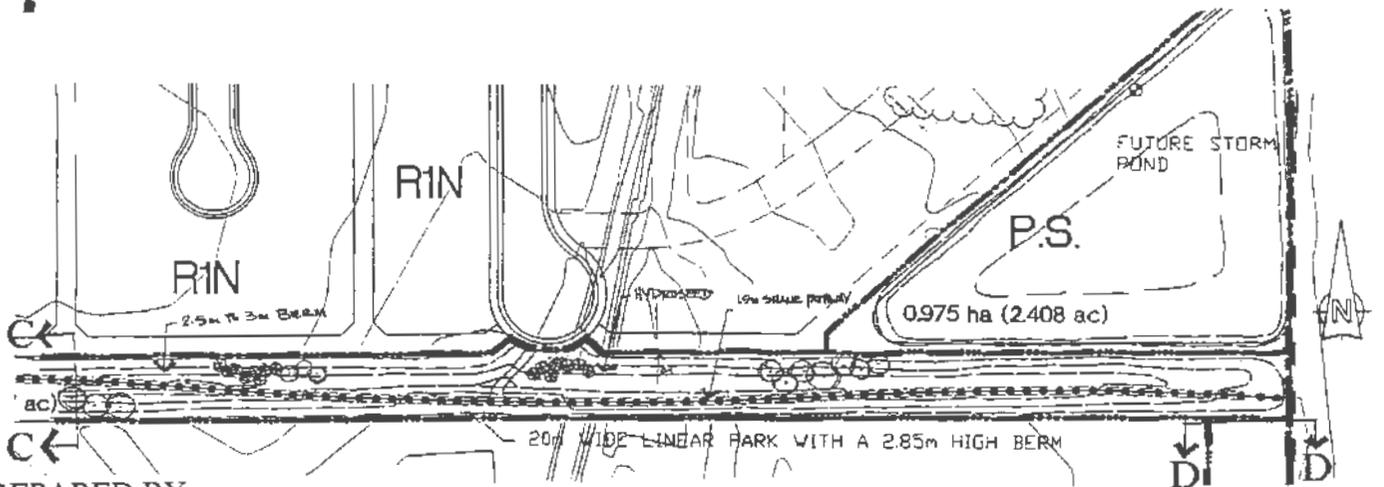
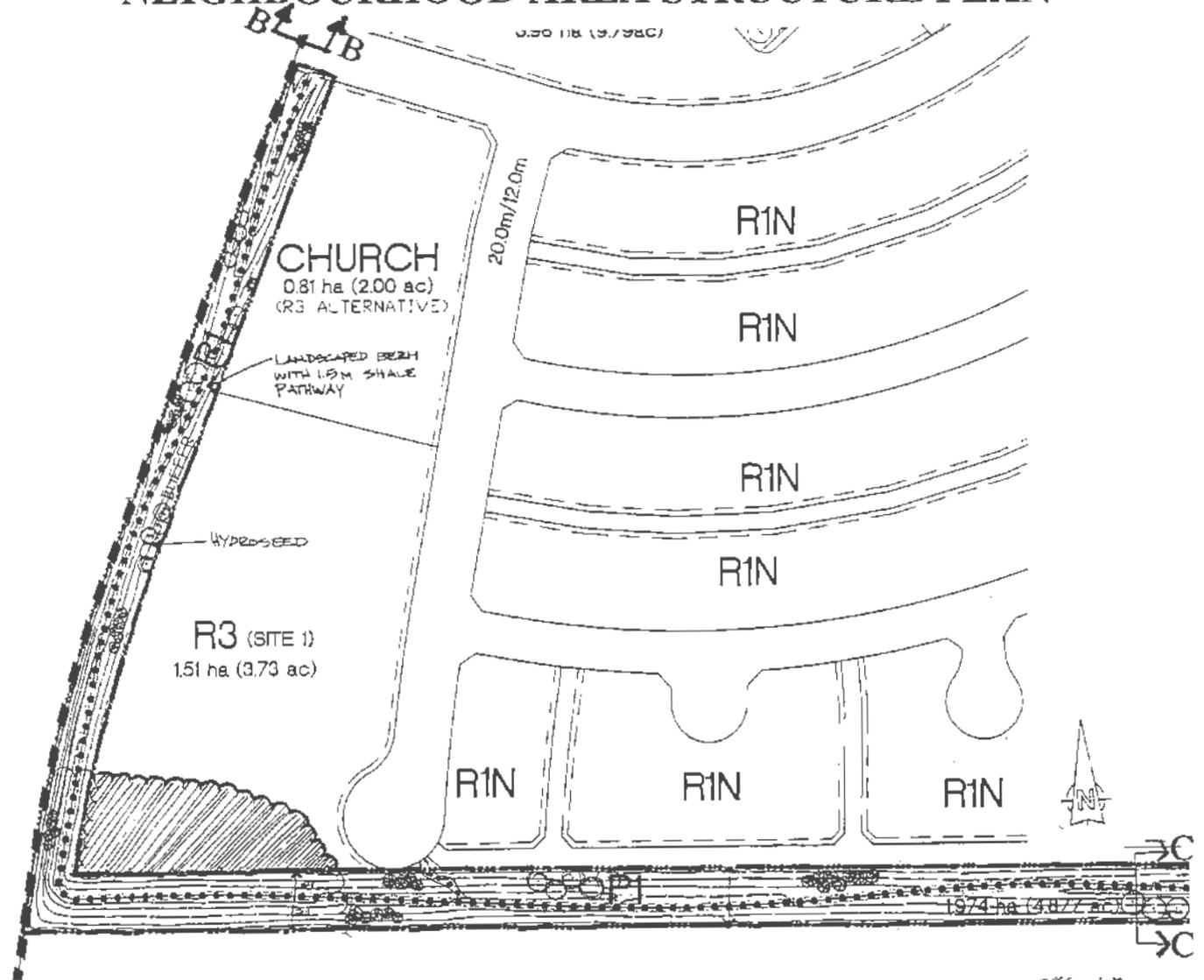


PREPARED BY:
IBI GROUP

SCALE: N.T.S.
PREPARED JUNE 99

PARK 'B'
CONCEPTUAL LAYOUT

GENCAN DEVELOPMENT LTD. NEIGHBOURHOOD AREA STRUCTURE PLAN

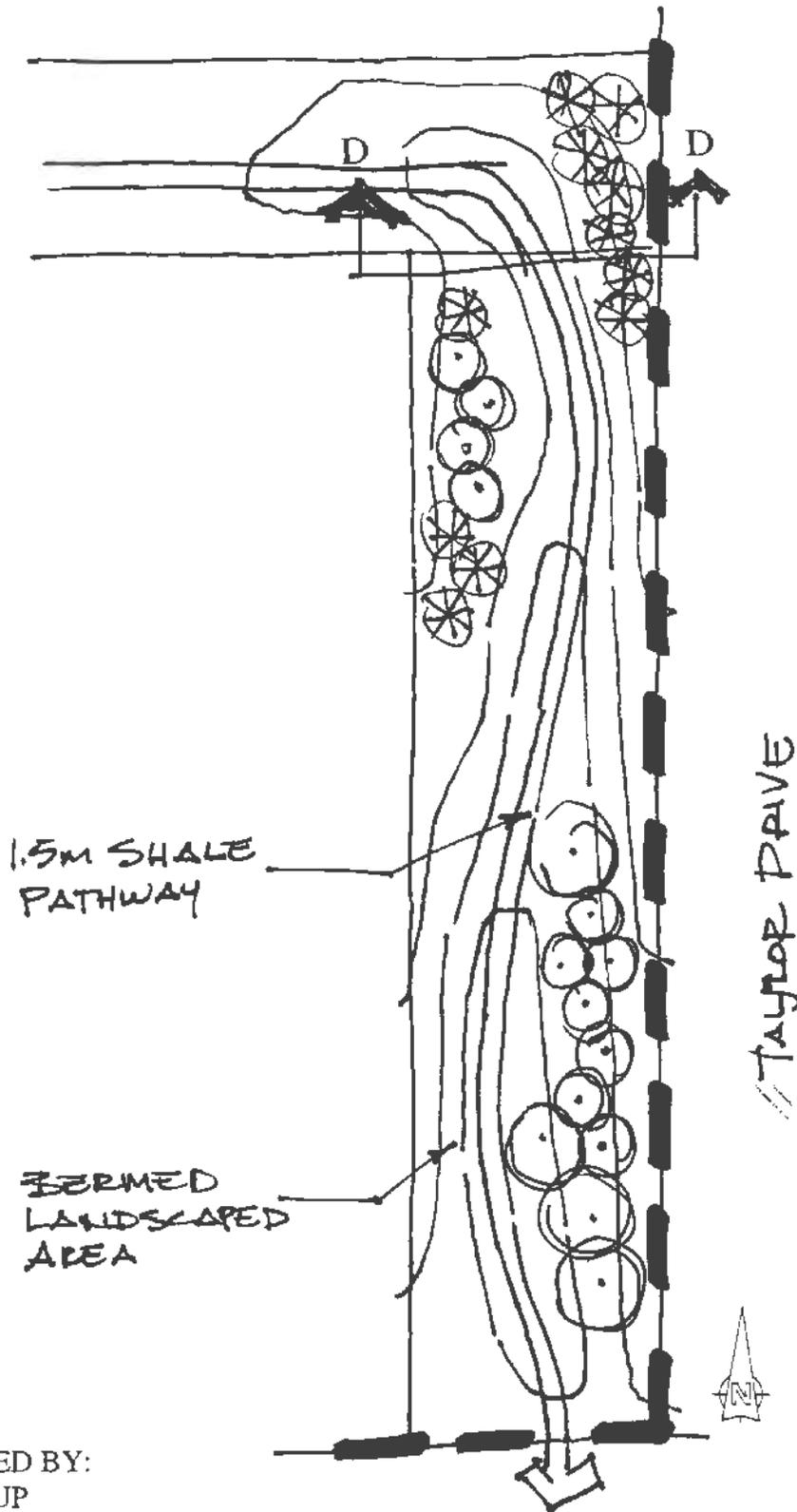


PREPARED BY:
IBI GROUP

SCALE: N.T.S.
PREPARED JUNE 99

PARK 'C'/ PARK 'D'
CONCEPTUAL LAYOUT

GENCAN DEVELOPMENT LTD. NEIGHBOURHOOD AREA STRUCTURE PLAN



PREPARED BY:
IBI GROUP

SCALE: N.T.S.
PREPARED JUNE 99

PARK 'E'
CONCEPTUAL LAYOUT