

# Laois - Kilkenny Reinforcement Project Environmental Reports

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## Study Area Constraints Report – Soils and Geology

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October 2010

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## 1. Introduction

This section identifies the soils and geological constraints that exist in the study area as defined for the proposed Laois-Kilkenny reinforcement project. This report was prepared by Mr. Brian Tiernan, Environmental Consultant – AWN Consulting.

The purpose of this report is to provide an assessment for the lead consultant ESBI, of the constraints found within the overall project study area.

## 2. Methodology and Information Sources

The following list of maps and publications, together with databases, were reviewed as part of the assessment of constraints in relation to soils and geology:

- Ordnance Survey of Ireland Discovery Series 1:50,000 Map Series, Nos. 54, 55, 60 & 61
- Soil Map of Ireland, An Foras Taluntaisi, 1980
- Geological Survey of Ireland (GSI)/Teagasc Soils Map, Online Map Database
- GSI, Geology of Kildare-Wicklow, Sheet 16
- GSI, Geology of Carlow - Wexford, Sheet 19
- GSI, Geology of Tipperary, Sheet 18
- Karst Database, GSI
- Quaternary (Subsoils) Database, GSI
- Groundwater Well Database, GSI
- Landslides in Ireland, GSI Irish Landslides Working Group, 2006
- GSI Heritage Programme, Sites of Geological Interest

## 3. Soils

The soils distribution across the study area is provided on the GSI/Teagasc Soils Map and the Soils Map of Ireland. The maps identified Gleys and Grey Brown Podzolics as the distinct soil types that exist in the general area with Basin Peat found at "the pass of the planes" located along the R427, 4km southwest of Loughteeg, Ballyroan, Co. Laois, Bernardsgrove, Co. Laois and to the South of Abbeyleix, Co. Laois. Some of these areas have been harvested commercially. Peat is also found 4km east of Castlecomer, Co. Kilkenny.

### *Gleys*

Gleys are soils in which the effects of drainage impedance dominate and which have developed under the influence of permanent or intermittent water logging. The impedance may be due to a high water table, to a 'perched' water table caused by the impervious nature of the soil itself, or to seepage of runoff from slopes. Most gleys have poor physical conditions, which make them unsuitable for cultivation or for intensive grassland farming. Their productive capacity is also affected by restricted growth in spring and autumn.

### *Grey Brown Podzolics*

These soils are generally poor soils, depleted of nutrients by heavy rainfall leaching through an organic layer (the podzolisation process). The surface layer contains organic matter that is intimately mixed with mineral matter.

### *Basin Peat*

This was formed in lake basins, hollows and river valleys, or where the sub-soil is sufficiently impermeable to give a high water table. Variations in the concentration of component plant

remains in fen as basin peat depend on the topographic situation and nutrient content of the water supply.

#### 4. Quaternary Geology

The study area was glaciated on at least two occasions but the majority of the sediments present today are as a result of the last glaciation, which was at its maximum some 24,000 years ago.

With reference to the EPA (<http://maps.epa.ie/>), the subsoils comprise of till derived from sandstones, shales and limestones of the Carboniferous Period. Till is an unsorted sediment derived from the transportation and deposition of, by, or from, a glacier. Glacial till is composed of a heterogeneous mixture of clay, sand, gravel and boulders. The following subsoil groups occur in the study area:

- Till derived chiefly from Limestone.
- Till derived chiefly from Namurian sandstones and shales
- Till derived chiefly from Devonian sandstones
- Blanket Peat
- Cut Peat
- Alluvium undifferentiated

The GSI Well Card Index is a record of wells drilled in Ireland. This Index shows a number of wells within the study area. While much useful information can be obtained from this Index, it is important to note that it is by no means exhaustive, as it requires individual drillers to submit details of wells in each area. The well card data presented in the Appendix shows the occurrence of recorded wells within the study area, information regarding the depth to bedrock, and hence the depth of overburden for each well.

The well card data shows that the wells recorded have depths of overburden varied throughout the study area where the depths to bedrock varied from ground level to 27.4m Below Ground Level (BGL).

#### 5. Bedrock Geology

An inspection of the GSI records shows the study area to be underlain by sandstones shales and limestones of the Carboniferous Period. Different geological formations that make up the study area are the following:

- **Ballyadams Formation** - Grey thick bedded crinoidal calcarenitic wackstone and packstone limestone with clay wayboards towards the top.
- **Clogrenan Formation** - Cherty argillaceous grey calcarenitic wackstone and packstone limestones.
- **Luggacurren Shale Formation** - Dark-grey to black mudstones and shales with thin bedded muddy cherts and limestones and fossiliferous marine bands.
- **Killeshin Siltstone Formation** - Grey muddy siltstones or silty mudstones with subordinate sandstone.
- **Carlow Flagstone Member** - Fine, grey, flaggy sandstone.
- **Bregaun Flagstone Formation** - Thick bedded flaggy sandstones and siltstones.
- **Moyadd Coal Formation** - Black shales, siltstone and occasional sandstone.
- **Clay Gall Sandstone Formation** - Feldspathic, quartzitic sandstone.

- **Coolbaun Formation** - A cyclic repetition of shale, sandstone, seatearth and coal.
- **Swan Sandstone Member** - Laminated, dark grey fine grained siliceous sandstone.
- **Durrow Formation** - Fossiliferous grainstones, shales and oolites with a few micrites.

## 6. Karst Features

The Karst database held by the GSI was consulted. This database holds records of locations and types of reported Karst features. No recorded karst features from the GSI database exist within the study area.

## 7. Slope Stability

In areas with sloping ground, the composition and extent of the subsoils is an influencing factor in the stability of slopes. The actual consolidation of deposits varies considerably based on a wide range of factors at a local level. Detailed information of the geotechnical capability of deposits can only be determined following intrusive site investigation.

The GSI has developed a database of historical landslides in Ireland. This database has been consulted and recorded events at the following locations within the study area:

- Maidenhead, Co. Laois (Grid Reference 264860 184130)
- Cullenagh Mountain, Co. Laois (Grid Reference 248000 189000)

## 8. Areas of Geological Heritage

The GSI was consulted in relation to any areas of geological heritage or interest located in the study area.

The GSI is in partnership with the National Parks and Wildlife Service (NPWS) to identify and select any important geological and geomorphological sites throughout the country for designation as NHAs (Natural Heritage Areas). This is addressed under 16 different geological themes. A large number of sites are currently being examined in order to identify the most significant scientifically. Sites that do not qualify as a proposed NHA, may qualify under the second tier of County Geological Sites (CGS), which would be included in County Development Plans and receive a measure of protection through inclusion in the planning system.

According to the GSI, there are 8 sites of geological interest that lie within the study area, these are as follows:

- **Lisdowney Quarry, Co. Kilkenny** - Lower Carboniferous (Brigantian) crinoid fauna. This site is proposed for NHA. Known for the important Brigantian crinoid fauna and for the blastoids *Codaster acutus* and *Codaster* sp.
- **Deer Park Mine, Co. Kilkenny** - Large disused coal mine in the Coolbaun Formation, and old mine buildings. This site is proposed for NHA.
- **Timahoe Eskers, Co. Laois** - Esker ridges. This site is proposed for CGS. The GSI has classified it as one of the best examples of esker ridges in the country showing branching and other characteristic features. A nice anatomising ridge, associated with moraine and fan features in a nice topographic setting.

- **Rock of Cashel, Co. Laois** - deposition features, crinoids and brachiopods. This site is proposed for CGS. Small outcrop of limestone with characteristics of deposition in turbid environments. The rock is highly fossiliferous with crinoids and brachiopods.
- **Flemings Fireclay Quarries (at Swan), Co. Laois** – Fireclays. This site is proposed for NHA.
- **Kyle Spring, Co. Laois** – spring wells. This site is proposed for NHA.
- **Moyadd Stream, Co. Laois** - Westphalian stratigraphical section. This site is proposed for NHA. This is an excellent example of the typical lithologies of the basal Coal Measures shown in this stream section. Many of the beds are fossiliferous.
- **Clogh River, Co. Laois-Kilkenny** - Braided river channel. This site is proposed for CGS. Series of dry braided river channels are found along the tightly meandering Clogh River. Braided or transitional to braided river may be influenced by input of sediment from mining waste

## 9. Constraints

The key constraints in relation to soils and geology are the following:

- **Sloping ground and soft ground including blanket peat** – there are a number of potential impacts associated with construction of structures in sloping ground, soft ground and blanket peat, in particular in the identified areas to the west of Ballyroan, Co. Laois and to the south of Abbeyleix, Co. Laois. Slope angle, accumulation of water following a high intensity rainfall event and the presence of drains in the vicinity of the construction area can lead to peat slope failure. On site machinery and dewatering activities are also contributing factors.
- **Areas of made ground** - these areas are located at residential areas (towns and villages such as Castlecomer, Ballyragget, Timahoe and Abbeyleix). Cut material would be generated if construction was located in these areas, however the amount would not be significant.
- **Areas where rock is close to the surface** – Rock at the surface is present in isolated locations within the study area. Bedrock would be generated as surplus material if construction was located in these areas. Due to the nature of the construction works the amount would not be significant. The surplus material would need to be managed in accordance with the Waste Management Act 1996 and amendments.
- **Areas of Geological Heritage** – 8 sites of geological interest lie within the study area. The GSI have stated that there are no set distance requirements for proposed developments in the vicinity of geological NHAs and CGSs. Distance is decided on a site by site basis. GSI has indicated that at certain geological heritage sites, excavations may contribute to further understanding of the geology. Consultation should take place with the GSI during the EIS stage to ensure that structures are located at a suitable distance.

## 10. Conclusions

The constraints in relation to soils and geology are highlighted in the previous section, the potential impact of the proposed development, in relation to soils and geology will be identified in the EIS. Cognisance will be taken of the highlighted constraints during the

preparation of the EIS. The implementation of appropriate mitigation measures in the EIS will ensure there will be no significant residual impact on the environment from the proposed development in respect to soils and geology.

## REFERENCES

1. An Foras Taluntaisi, (1980), Soil Map of Ireland.
2. B.McConnell, M.E. Philcox, (1994), Geology of Kildare-Wicklow, Sheet 16. Geological Survey of Ireland.
3. D.Tietzsch-Tyler, A.G. Sleeman., (1994), Geology of Carlow-Wexford, Sheet 19. Geological Survey of Ireland.
4. J.B. Archer, A.G. Sleeman and D.C. Smith, (1996), Geology of Tipperary, Sheet 18. Geological Survey of Ireland.

## **Appendix**

### **GSI Well Data for Study Area showing Depth To Bedrock (DTB)**



| GSI Code   | Depth (meters) | Easting | Northing | Townland           | County   | DTB  |
|------------|----------------|---------|----------|--------------------|----------|------|
| 2317NEW203 | 3.7            | 253240  | 181670   | CHATSWORTH         | Kilkenny | 3    |
| 2317NEW204 | 5.6            | 253400  | 181080   | CHATSWORTH         | Kilkenny | 2    |
| 2317NEW205 | 3.4            | 255120  | 181470   | CHATSWORTH         | Kilkenny | 3.4  |
| 2317NEW209 | 43.3           | 254650  | 182530   | CHATSWORTH         | Kilkenny | 18.9 |
| 2317SEW065 | 6.6            | 253250  | 173840   | CLONBUREN          | Kilkenny | 2.4  |
| 2317SEW101 | 12.2           | 247850  | 178540   | LOUGHILL           | Kilkenny | 11   |
| 2317SEW104 | 14             | 245880  | 178530   | CASTLEMARKET       | Kilkenny | 6    |
| 2317SEW107 | 15             | 246300  | 178560   | CASTLEMARKET       | Kilkenny | 14   |
| 2317SEW109 | 15.7           | 247000  | 178920   | LOUGHILL           | Kilkenny | 0    |
| 2317SEW113 | 3.6            | 251360  | 179180   | MOYHORA            | Kilkenny | 1    |
| 2317SEW114 | 7.9            | 252050  | 179320   | CRUTT              | Kilkenny | 2    |
| 2317SEW117 | 5.3            | 253250  | 178830   | CRUTT              | Kilkenny | 3    |
| 2317SEW118 | 4.6            | 253000  | 178140   | CRUTT              | Kilkenny | 2    |
| 2317SEW124 | 24.4           | 254360  | 178420   | CRUTT              | Kilkenny | 9.1  |
| 2317SEW130 | 2.3            | 257200  | 178990   | TOORTANE           | Kilkenny | 5    |
| 2317SEW133 | 8.6            | 257750  | 178800   | TOORTANE           | Kilkenny | 5    |
| 2317SEW137 | 10             | 246150  | 176290   | BALLYOSKILL        | Kilkenny | 7.5  |
| 2317SEW151 | 4.3            | 247640  | 172250   | FINNAN             | Kilkenny | 3.8  |
| 2317SEW152 | 16.5           | 246840  | 172220   | FINNAN             | Kilkenny | 6    |
| 2317SEW160 | 4.3            | 252190  | 172840   | DONAGUILE          | Kilkenny | 4    |
| 2317SEW161 | 25             | 252170  | 172280   | DONAGUILE          | Kilkenny | 7    |
| 2317SEW164 | 26             | 251780  | 171660   | CLASHDUFF<br>UPPER | Kilkenny | 7    |
| 2317SEW168 | 33             | 251000  | 175700   | SKEHANA            | Kilkenny | 7    |
| 2317SEW169 | 52             | 250670  | 176150   | SKEHANA            | Kilkenny | 4    |
| 2317SEW170 | 33             | 251280  | 176460   | SKEHANA            | Kilkenny | 3    |
| 2317SEW172 | 18.2           | 251170  | 176970   | SKEHANA            | Kilkenny | 10   |
| 2317SEW175 | 22             | 252440  | 177110   | MOYHORA            | Kilkenny | 8    |
| 2317SEW176 | 163.1          | 252550  | 177150   | MOYHORA            | Kilkenny | 13   |
| 2317SEW178 | 11.6           | 253770  | 176060   | MOYHORA            | Kilkenny | 6.1  |
| 2317SEW187 | 14.3           | 257470  | 177300   | CLONEEN            | Kilkenny | 1    |
| 2317SEW191 | 14.3           | 256570  | 174720   | COOLBAUN           | Kilkenny | 3    |
| 2317SEW192 | 54             | 256790  | 174860   | COOLBAUN           | Kilkenny | 0    |
| 2317SEW193 | 6              | 257880  | 175370   | GORTEEN            | Kilkenny | 6    |
| 2317SEW194 | 28.4           | 258050  | 175520   | GORTEEN            | Kilkenny | 10   |
| 2317SEW196 | 8              | 258310  | 174430   | CROGHTENCLOGH      | Kilkenny | 5    |
| 2317SEW198 | 6.6            | 258360  | 174130   | CROGHTENCLOGH      | Kilkenny | 2.4  |
| 2317SEW199 | 23.5           | 258400  | 173690   | CROGHTENCLOGH      | Kilkenny | 4    |
| 2317SEW205 | 18             | 258790  | 173800   | CROGHTENCLOGH      | Kilkenny | 4    |
| 2317SEW207 | 19.7           | 259880  | 173800   | CROGHTENCLOGH      | Kilkenny | 6    |
| 2317SEW208 | 24.2           | 259360  | 173370   | CROGHTENCLOGH      | Kilkenny | 16   |
| 2317SEW209 | 8.5            | 259180  | 172380   | COAN WEST          | Kilkenny | 6    |
| 2317SEW211 | 36.2           | 256280  | 172680   | AGHAMUCKY          | Kilkenny | 12   |
| 2317SEW212 | 15.3           | 256140  | 171630   | SMITHSTOWN         | Kilkenny | 6.1  |
| 2317SEW213 | 7.5            | 255140  | 172180   | SMITHSTOWN         | Kilkenny | 1    |
| 2317SEW217 | 10.7           | 253180  | 171320   | BALLYHIMMIN        | Kilkenny | 7    |
| 2317SEW222 | 48.8           | 254530  | 170170   | KNOCKANADDOGE      | Kilkenny | 0.9  |
| 2317SEW227 | 24.8           | 256280  | 170810   | USKERTY            | Kilkenny | 6.1  |
| 2317SEW229 | 49.1           | 259430  | 171070   | COAN WEST          | Kilkenny | 22.3 |

| GSI Code   | Depth (meters) | Easting | Northing | Townland             | County   | DTB  |
|------------|----------------|---------|----------|----------------------|----------|------|
| 2317SEW232 | 0.9            | 259610  | 170500   | COAN EAST            | Kilkenny | 0.9  |
| 2317SEW234 | 0              | 256990  | 175180   | COOLBAUN             | Kilkenny | 0    |
| 2317SEW235 | 0              | 256790  | 175020   | COOLBAUN             | Kilkenny | 0    |
| 2317SEW236 | 0.7            | 256990  | 174400   | COOLBAUN             | Kilkenny | 0    |
| 2317SEW239 | 0              | 257090  | 175600   | MONEENROE            | Kilkenny | 0    |
| 2317SEW240 | 0              | 257590  | 175730   | GORTEEN              | Kilkenny | 0    |
| 2317SEW249 | 13.1           | 254900  | 170630   | KNOCKANADDOGE        | Kilkenny | 2.1  |
| 2317SWW413 | 71.4           | 241300  | 172360   | SESKIN NORTH         | Kilkenny | 6.1  |
| 2317SWW415 | 63.7           | 242620  | 174820   | BALLYNASLEE          | Kilkenny | 4.3  |
| 2317SWW416 | 63.7           | 242640  | 174750   | BALLYNASLEE          | Kilkenny | 3.7  |
| 2317SWW417 | 20.2           | 243280  | 173100   | BALLYCONRA           | Kilkenny | 8.1  |
| 2317SWW418 | 30.1           | 243630  | 172820   | BALLYCONRA           | Kilkenny | 27.4 |
| 2317SWW420 | 33.5           | 243500  | 171730   | BALLYCONRA           | Kilkenny | 27   |
| 2317SWW421 | 27.4           | 243580  | 171680   | BALLYCONRA           | Kilkenny | 25.9 |
| 2317SWW423 | 152            | 243880  | 172040   | BALLYCONRA           | Kilkenny | 4.6  |
| 2317SWW424 | 3.7            | 244870  | 176550   | EARLSGARDEN          | Kilkenny | 3.7  |
| 2317SWW425 | 6.3            | 244920  | 176200   | BALLYOSKILL          | Kilkenny | 4.7  |
| 2317SWW426 | 4              | 244340  | 175480   | RUSELLSTOWN          | Kilkenny | 3.9  |
| 2317SWW443 | 61             | 243420  | 171760   | BALLYCONRA           | Kilkenny | 9.4  |
| 2317SWW444 | 30.5           | 243360  | 171900   | BALLYCONRA           | Kilkenny | 13.1 |
| 2317SWW445 | 30.5           | 243620  | 171970   | BALLYCONRA           | Kilkenny | 14.8 |
| 2317SWW446 | 27.5           | 243280  | 172240   | BALLYCONRA           | Kilkenny | 19.5 |
| 2317SWW447 | 18             | 243910  | 172310   | BALLYCONRA           | Kilkenny | 12.2 |
| 2317SWW449 | 9.8            | 244000  | 172250   | BALLYCONRA           | Kilkenny | 5    |
| 2317SWW450 | 68.6           | 243970  | 172240   | BALLYCONRA           | Kilkenny | 5    |
| 2317SWW451 | 45.7           | 243980  | 172180   | BALLYCONRA           | Kilkenny | 6.7  |
| 2317SWW452 | 5.5            | 243930  | 172050   | BALLYCONRA           | Kilkenny | 3    |
| 2317SWW453 | 12.8           | 243570  | 171720   | BALLYCONRA           | Kilkenny | 11.9 |
| 2317SWW455 | 61             | 243960  | 171600   | BALLYCONRA           | Kilkenny | 21.5 |
| 2317SWW456 | 30             | 243730  | 171660   | BALLYCONRA           | Kilkenny | 10   |
| 2317SWW464 | 3              | 241130  | 170770   | LISDOWNEY            | Kilkenny | 3    |
| 2317SWW468 | 42.1           | 244800  | 176210   | EARLSGARDEN          | Kilkenny | 4.9  |
| 2317NEW055 | 5.8            | 259570  | 183430   | BALLYLEHANE UPPER    | Laois    | 5.5  |
| 2317NEW056 | 2.7            | 259540  | 183370   | BALLYLEHANE UPPER    | Laois    | 0.9  |
| 2317NEW061 | 50.3           | 258880  | 181870   | SLATT UPPER          | Laois    | 10.7 |
| 2317NEW066 | 24.4           | 258800  | 181100   | SLATT UPPER          | Laois    | 7.6  |
| 2317NEW067 | 19.8           | 258420  | 181000   | SLATT UPPER          | Laois    | 3.7  |
| 2317NWW125 | 33.5           | 241220  | 187670   | DERRYKEARN           | Laois    | 9    |
| 2317NWW132 | 29.3           | 240690  | 189580   | FOXBURROW            | Laois    | 24.4 |
| 2317NWW136 | 29.3           | 241620  | 188360   | DERRYKEARN           | Laois    | 3.4  |
| 2317NWW173 |                | 240280  | 185120   | BOLEY LOWER          | Laois    | 9.8  |
| 2317NWW175 | 7              | 240610  | 185290   | BOLEY LOWER          | Laois    | 6.1  |
| 2317NWW192 | 122            | 243350  | 189150   | CORBALLY             | Laois    | 10.7 |
| 2317NWW193 | 15             | 243360  | 189100   | CORBALLY             | Laois    | 10.7 |
| 2317NWW237 | 28.7           | 241040  | 180820   | DUNMORE              | Laois    | 7.6  |
| 2317NWW300 | 20.3           | 242930  | 180150   | WATERCASTLE          | Laois    | 20.3 |
| 2317SEW017 | 44.2           | 250000  | 179700   | KILRUSH              | Laois    | 2.1  |
| 2317SWW058 | 29.3           | 240220  | 177510   | CASTLEDURROW DEMESNE | Laois    | 0.6  |

| GSI Code   | Depth (meters) | Easting | Northing | Townland              | County | DTB  |
|------------|----------------|---------|----------|-----------------------|--------|------|
| 2317SWW059 | 23.8           | 240200  | 177490   | CASTLE DURROW DEMESNE | Laois  | 4.5  |
| 2317SWW061 | 21.9           | 240150  | 177450   | CASTLE DURROW DEMESNE | Laois  | 15.6 |
| 2317SWW069 | 15.5           | 242350  | 178710   | CASTLEWOOD            | Laois  | 15.5 |
| 2317SWW071 | 23.5           | 242280  | 178300   | CASTLEWOOD            | Laois  | 3    |
| 2317SWW072 | 10.7           | 242510  | 177900   | CASTLEWOOD            | Laois  | 10.7 |
| 2317SWW073 | 2.1            | 243200  | 177770   | GRENAN                | Laois  | 2.1  |
| 2317SWW075 | 5.2            | 243410  | 177620   | CLORHAUN              | Laois  | 5.2  |
| 2317SWW078 | 4.3            | 243520  | 177280   | CLORHAUN              | Laois  | 4.3  |
| 2317SWW079 | 1.8            | 243500  | 177120   | GRENAN                | Laois  | 1.8  |
| 2317SWW083 | 22.9           | 243350  | 179540   | BRANDRA               | Laois  | 21.3 |
| 2317SWW084 | 28             | 243350  | 179680   | BRANDRA               | Laois  | 8.5  |
| 2317SWW085 | 3.7            | 241470  | 178620   | COURSE                | Laois  | 3.7  |
| 2317SWW086 | 4.9            | 240450  | 178600   | SWAN                  | Laois  | 4.9  |
| 2317SWW089 | 36.9           | 240720  | 179010   | DUNMORE               | Laois  | 10.7 |
| 2317SWW103 | 51.8           | 241530  | 179930   | DUNMORE               | Laois  | 5.5  |
| 2317SWW104 | 26.7           | 242850  | 179100   | FERMOYLE              | Laois  | 8.2  |
| 2317SWW171 | 58             | 239900  | 172630   | AHARNEY               | Laois  | 15   |
| 2317SWW173 | 23             | 240700  | 174410   | ARCHERSTOWN           | Laois  | 3.1  |
| 2317SWW174 | 10             | 240800  | 173950   | ARCHERSTOWN           | Laois  | 10   |
| 2317SWW188 | 10.2           | 243050  | 175610   | GRENAN                | Laois  | 10.2 |
| 2317SWW189 | 37             | 243050  | 176140   | GRENAN                | Laois  | 8    |
| 2317SWW190 | 13.9           | 243000  | 176150   | GRENAN                | Laois  | 13.9 |
| 2317SWW212 | 61             | 240150  | 172300   | AHARNEY               | Laois  | 13.7 |
| 2317SWW213 | 63.1           | 239810  | 172870   | AHARNEY               | Laois  | 12.2 |
| 2317SWW214 | 64             | 240000  | 172820   | AHARNEY               | Laois  | 11   |
| 2319SEW116 | 22.6           | 256700  | 194610   | TIMOGUE               | Laois  | 7    |
| 2319SEW117 | 32.3           | 255970  | 193950   | TIMOGUE               | Laois  | 3.7  |
| 2319SEW118 | 29             | 256350  | 194590   | TIMOGUE               | Laois  | 17.1 |
| 2319SWW099 | 33.3           | 239570  | 191700   | ROSKELTON             | Laois  | 3.1  |
| 2319SWW138 | 12             | 239490  | 190580   | BAWNAREE              | Laois  | 10.7 |
| 2319SWW200 | 25             | 242700  | 194680   | OLDTOWN               | Laois  | 6.7  |